The Builder.

No. CI.

SATURDAY, JANUARY, 11, 1845.

THE Metropolitan Buildings Act came into full operation on Wednesday, the 1st instant, and the new surveyors appointed under it came into authority. Their duties are not light,—there is much work before them; as, indeed, there is much increase of work for the district-surveyors appointed under the old Act,—and they must apply themselves vigorously to their task.

According to the new Act, buildings begun before the 1st instant, "and covered in and rendered fit for use within twelve months thereafter," are exempted from its provisions. A knowledge of this circumstance led to the commencement of a vast number of buildings in the new districts at the end of last year, for the most part in an insufficient and faulty manner. Immediately preceding the frost, and in some places during its continuance, the bricklayers were at work without taking even ordinary precautions to prevent injury to the work, such as using the lime quite fresh, clean Thames sand, good bricks perfectly dry; and covering up the walls at night, so as to allow the mortar to set as quickly as possible. The great demand having made bricks scarce, and consequently very dear, the merest rubbish has been used, and *mould*, in many places under our own eyes, has supplied the place of sand in the mortar. The consequence is, that much of the work done is not sound, and should be taken down; in fact, in several quarters it has not waited to be taken down, but has fallen of its own accord. Except in extreme cases, however, we apprehend the district-surveyors will not be able to interfere. Where danger is actually apparent, they may perhaps treat them as *ruinous buildings*, under the 40th section, and with the aid of the overseers and official referees, may cause them to be strengthened or demolished.

Schedule E. provides, relative to projected buildings, that "such projections must neither be built with, nor be added to, any building, or any face of an external wall thereof, so as to extend beyond the general line of the fronts of the houses." In some of the new districts, where the houses stand back from the road, and have front gardens, shops have been hastily executed on that space, to the destruction of regularity, the annoyance of the neighbourhood, and the manifest injury of the adjoining houses. In Brompton (part of Mr. Donaldson's district), a number of such erections have been made, in rows of what have been private houses. Whether or not the owners of adjoining buildings will be allowed to come forward in the same manner, the value of the houses as private residences being destroyed, will depend on the surveyor, as by the section already referred to, what is "the general line of the fronts of the houses" may be determined by him.

The question of drainage is one to which the attention of district surveyors is now first directed, and a very important one it is. Schedule H. provides that the drains from all buildings (hereafter built) shall be completed before the walls are ten feet high; and shall be taken into a common sewer, "if there be within 100 feet from any part of the building, or from the inclosure about the building, a common sewer into which it is *lawful and practicable to drain*."

Further on it provides, touching cesspools, that "if there be a common sewer within 50 feet from any front of or from the inclosure about any house or other building (hereafter built), then a cesspool must not be made for the reception of drainage from such house or other building, unless there be or shall be built a good and sufficient drain from such cesspool to such common sewer."

Insomuch, however, as the Commissioners of Sewers, who retain all their powers and authority, will not ordinarily allow drains to be taken into a sewer until it be brought up to the building about to be drained, this provision would seem to have the effect of compelling owners in many cases to build 50 feet of sewer:—a sewer being within that distance, they may not form cesspools.

Every main drain must be 9 inches in diameter inside; and must have a fall of at least half an inch to every 10 feet, and be arranged so that it shall be wholly covered over under the lowest floor, and independently thereof. It must likewise be made air-tight. In many new houses built "to sell," the pavement in the kitchen or passages forms the top of the drain: a most inefficient and improper mode of construction, which the foregoing provision will prevent for the future. All cesspools constructed under a building must be made air-tight. We need hardly say to our practical readers that in nine cases out of ten where the drains go into a sewer, it is much better to have no cesspool at all. With drains properly formed, sufficient water, and a good fall, cesspools are quite unnecessary, and should be avoided as a great nuisance.

Another important matter (so far as relates to public health) in which district surveyors are required to co-operate is, the prohibition of the use of buildings unfit for dwellings. No decided steps can be taken till the 1st of July, 1846; but overseers should already have reported to the official referees, the number and situation of dwellings in their respective parishes, wherein any underground room or cellar is occupied as a dwelling, in order that notice may be given to their owners and occupiers, of the provisions of the Act in this respect.

DECAY OF TIMBER—CAUSE AND CURE.

THE prevention of decay in the timber-work of buildings we may consider as being very much within our own power; for where due precautions are taken, in felling at the proper time, and thoroughly seasoning the wood itself, and in obviating the chances of harm which might accrue to it from contact with other materials, decay will rarely appear in any form. There are, no doubt, causes which induce decay, where the operation of those under the control of the architect or builder has been prevented: lofts are often filled with stores of a damp and musty nature; manufactures are carried on in which much water is used, much constantly spilt; very frequently, co-operating with this moisture in the work of destruction, is the heat of powerful stoves, which keep the air at a high temperature; painted and other floor-cloths are unsuspectingly and unsparingly spread and fastened down, intercepting the salutary action of the air, and retarding, if not totally preventing, such evaporation as may be wanted. But for such cases as some of these, extraordinary treatment is necessary, although much may be accomplished by mature preconsideration of the intended purpose of the building, and an anticipation of its liabilities.

Among the most active agents of decay in the timber of buildings may be instanced deficient drainage and imperfect ventilation. Where these exist, even perfect seasoning will not be sufficient to ensure durability. Where a radical reform is carried out in them, timber, even imperfectly seasoned, may better serve our purpose; for where damp is precluded, and thorough ventilation sustained, the seasoning must advance to perfection. It is in this conviction that we feel disposed to arraign the whole system of building, as it has been pursued in later times; and to hail with gratulation a change which, though little more than begun, will progress surely, and the further the more rapidly; till, with the "wisdom of our ancestors," in this particular, in vivid light before our eyes, enhanced by the superior state of science, a code of principles will be formed, infallible because founded on common sense. It will not long, we think, be cavilled with, that the existing (now passing) system of stuccoing, external and internal, however much talent, in many respects, it may display, is, in a great measure, contemptible and injudicious. Compoing induces bad bond; bad bond has given rise to bond timbers; these have been pent in by brick and plaster till they rotted away, and disunited the work they were meant to hold together. A niggardly anxiety to reduce the cost of carpentry, the most scientific and perhaps the most beautiful part of good building, has produced plaster ceilings, to the endangerment at once of the science itself, therefore of the stability of our walls, and of the durability of our floors, confining noxious and corrupting vapours. What can we more admire than the open timbering of an ingenious, skilfully-disposed roof, one worked with a view to its being left at all times visible? Which can we the more esteem, the palpable falsity of an ornamented plaster ceiling, that impends over our own heads and the brilliant scenes that shine around, or the more honest and safe, and equally ingeniously-elaborated timber soffit, not blandished over at fitful intervals with colour, but kept in healthy trim by good wholesome rubbing? But we must not diverge further from the straight line of our subject.

DAMP is a very active cause of decay: alternations of dryness and moisture are very destructive, such as is the case with the supports of a wooden bridge, or any other timbers in similar circumstances, weather-boarding, or fencing, exposed to the vicissitudes of the weather, for example. Timber placed in a situation which is constantly damp, is also liable to rapid decay—especially when exposed to atmospheric influence.

The object, then, is so to prepare the wood by some saturation or coating, as to render it impervious to the moisture which assails it: for this purpose several compositions are employed; but it must be remembered that while they are calculated to prevent decay in seasoned timber, unless the wood is thoroughly so, the application of any such covering will produce just the opposite effect to that which is intended—inclosing sap, and preventing evaporation, being known to afford infallible facilities to internal decay, besides which, however well the timber may be seasoned, and its sides defended against external influences, if due attention be not paid to the ends, whatever the position, all the care otherwise bestowed will be unavailing; the pores will admit the moisture, and decay will follow.

It is found that the wooden posts introduced to support the impending portion of salt mines, are rendered in a great degree imperishable by the constant and strong saline infusion which they imbibe; but notwithstanding this fact, it is obvious that timber seasoned by immersion in sea-water ought never to be employed for house-carpentry; for the impregnation which it has received will render it ever after most susceptible of damp, as indeed is any substance which contains salt; and while the particular timbers which had been so seasoned might contain within themselves principles exempting them from decay, they would most probably be the vehicle to bring destruction to the work around them: for the same reason the walls of buildings should not be built with mortar made with sea-water, or finished with plaster in which it is used.*

* If the mortar or parget with which a chimney-flue is to be plastered be mixed with salt, it will obviate any future temptation to contravene a very humane enactment—that which closed the particular channel for the pursuit of k.u.d., which whilom invited the especial investigation of the climbing-boy; for with every spell of damp weather, the salt will liquify and disengage the soot, a property which in one recorded instance remained unimpaired after thirty years' operation, but whether to the advantage or discomfort of those immediately interested does not appear.

In building on a damp soil, having provided for the drainage of the site and its vicinity, the walls to a little above the ground-line should be built with mortar incorporated with some ingredient giving it the property of a hydraulic cement, or such as would set under water; otherwise the mortar will never properly harden, but be inclined rather to decompose, and will always facilitate the rise of damp into the walls of the superstructure. Where there does not appear imperative occasion for incurring this extra expense, and indeed in all other cases than the one named, it is well to introduce near, but out of contact with the ground, a course of some material which is of a nature much more impermeable to moisture than the generality of building materials, a thin plate of some incorrodible metal for example, or a layer of hard slates in Roman cement, or of coal-tar and sand; either of these will intercept the rise of damp. In buildings of brick, it is the more necessary to have recourse to such measures, since that material is very absorbent in its nature, draws up damp to a considerable height, and retains it for a long time. Where the walls of a building in which no such precautions have been taken, have become damp, it would have a salutary effect to dig out the earth which lies against them, and apply a coat of concrete, or Roman cement, to the parts under the ground-line, then fill in the earth again; the current would thus be effectually stemmed, and on the right side of the wall; and all short-sighted attempts to shut it out from within, by means of tarred-paper, or tea-lead, rendered unnecessary. It is plain that where water is collecting, it must either run out or run over; and if an internal coating resists the percolation, the more is the pity, since the consequence must be the rise and spread of the mischief.

But where there is a sunk basement, and indeed in all cases, the best practice is to separate the walls from the surrounding ground by open areas, more or less wide as they can be obtained. Then, interiorly, the flagging should not be laid upon the natural earth or vegetable mould, but upon a stratum of concrete, or compact layer of ashes, stone-chippings, dry lime-rubbish, or other material calculated to intercept humidity and destroy vegetative principles, a precaution which is of course equally essential under the boarded floors of the same story,—it being provided in the latter case that a clear space of 18 inches height, or more, intervene between the said finishing stratum and the floor-boards, and a thorough ventilation admitted by means of perforated iron castings in the plinth course of the external walls. Where sleeper-walls occur, little arched openings should be formed in them for the same purpose. In superior buildings this method should be adopted for the flagging as well, as being the best for insuring a perfect exemption from damp,—the slabs being of large dimensions, assorted to certain widths, laid on dwarf walls with apertures, and their cross joints joggled or rebated for mortar to prevent any upward draught. Allusion need only be here made to the necessity which there is for making the right sort of provision, in the first instance, against the leakage of parapet gutters, down-pipes—whether soil or rain-water, cisterns, tanks, drains, &c.; the gutters named demand more care than is usually bestowed on them, and indeed can scarcely be made altogether perfect; and it is frequently from some of these causes, and where there is no damp foundation to blame, that timbers are rotted, and serious mischief occasioned: here then let us urgently recommend the relinquishment of wood bond, and suggest also the invariable adoption of a method of inserting the ends of timber beams in lieu of the more common practice of building close about them. Arched recesses, larger in every way than the ends of the beam, and having stone cills flush on the face, somewhat wider than the opening, and dovetailing inwards, should be prepared in carrying up the walls; the beams when laid in their places should be held there in one or other of the following ways; irons, say 2 feet long, should be bolted or screwed against the sides at each end, and turn down into mortises in the stone cill or templet, or dowels of iron or Valentia slate (if the latter, say 3 inches square by 4 long) should be let one-half of their length into the contiguous surfaces of the beam and templet—centrally in their width and as far from the ends of the former as is compatible with the strength of the latter supposing a tendency in the walls to fall outwards, and the beam to fulfil the part of a tye. The former and more expensive method is best calulated for cases where damp, and consequently decay at the ends of the beam is to be feared, but where all other precautions have been taken, the latter, which is extremely simple, is sufficient. When it is inconvenient to place the beams at the time of carrying up the walls, there can in general be no obstacle to leaving the back of one of the recesses open that the beam may subsequently be pushed far enough through it to admit of its other end being introduced into the one opposite. This mode of placing beams provides for the circulation of air round their ends, which from the exusion there that proceeds from such vegetable moisture as happens to remain, are liable to be soonest affected; it supersedes the necessity for charring or pitching the ends, which, however excellent in cases where the timber is perfectly seasoned, is injurious where it is not so; it also affords superior facility, should any deficiency take place, for splicing or entirely replacing them. J. W.

ROYAL INSTITUTE OF ARCHITECTS.

In the middle of last year the Institute offered medals for the best essays on the following subjects:—"On the system and principles pursued by the Gothic architects from the eleventh to the fifteenth centuries inclusive, in the embellishment by colour of the architectural members and other parts of their religious and civil edifices;" and "On the various species and qualities of slates, with an analysis of their component parts. their relative value and applicability for building purposes, and the best chemical tests for ascertaining their durability." They further offered the Soane medallion for the best design for a college in a university, of Roman or Italian architecture, with chapel, theatre, &c.; and required that the principal buildings should compose in a noble and imposing manner.

We regret to learn that, in reply to these invitations, only two essays have been received, both on the qualities of slates; and that no design has been sent in. It is extraordinary to find so little emulation amongst the rising members of the profession, as is thus rendered apparent. We shall aid in rendering widely known the subjects proposed for the ensuing year, and hope we shall have to record a more satisfactory result. The merits of the essays now submitted remain at present unknown.

At the next ordinary meeting of the Institute, which will be held in the new rooms on Monday next, a paper will be read by Mr. T. L. Donaldson, "On the history of architecture, from the building of the pyramids to the revival of Italian architecture in the sixteenth century."

Rise in the Price of Timber.—We are informed that the advance in the price of American timber, within the last twelve months, has been nearly 50 per cent. This extraordinary rise is attributed to the steady demand and the diminished stocks, caused by the great amount of shipping employed in the guano trade. The timber-carrying trade has not, for many years, been a profitable one, and though a great amount of tonnage will, no doubt, be employed next year, and tend to check the rise, still, as freights will necessarily be high, timber will, no doubt, for some time to come, command first-rate prices to the importers.—*Glasgow Courier.*

Gigantic Bronze Statue.—The *Journal des Débats* states that the gigantic head of the statue of Bavaria, a bronze statue, which is to be 68 feet high, was withdrawn from the mould in which it was cast at the royal foundry of Munich on the evening of the 14th ultimo, in presence of the king and queen of Bavaria, and a considerable number of distinguished personages. The beauty of the head of Bavaria, which is the work of the celebrated Schwanthaler, excited such enthusiasm amongst the spectators, that they joined their voices to a chorus of 300 of the Philharmonic Society of Munich, who chanted a hymn composed for the occasion by the Baron de Poissel, director of the Theatre Royal of Munich.

BUILDING SOCIETIES.

Letter V.

BY WILLOUGHBY WILTON.

We hinted in our last that we should now touch upon the *interest* charged by these societies; this, however, must briefly give place to some matters equally important in our investigations. If our readers will turn to page 589 of The Builder (vol. ii.), they will find what interest is charged per cent. per annum. For example, a man takes 4½ shares at the price of 70*l.*, making 315*l.*; for these 315*l.* he covenants to pay in time 540*l.*; but till he does so, he is charged what is called "redemption money or interest" *per* share per *month* upon the sum he gives up to the society as a *bonus* for immediate *cash*. In the case before us, he submits to a deduction of 50*l.* a share, or 225*l.* for 315 + 225 = 540. This monthly payment the poor man deems easy; the rich man finds it the nimblest element in the improvement of his capital. For it is this: interest or *redemption* money at 4*s.* a month, *i. e.* on the bonus or sum which the man did not receive; this on 4½ shares makes 18*s.* a month, which, with redemption money, 10*s.* a month, makes 3*l.* 3*s.*, or 37*l.* 16*s.* a year; but 37*l.* 16*s.* multiplied by 8½, become 321*l.* 6*s.*; so it is made to appear that the man can within even 8½ years pay off the loan with interest on the *bonus* by monthly instalments of 3*l.* 3*s.* We must not, however, omit the ground-rent, 5*l.* a year or 50*l.* in ten years, dilapidations, insurance of property, and loss of time in dancing attendance on the secretary with monthly payments, which we may here pass over, having already shewn the operation of these; nor must we omit the bonus of 225*l.*, which *must be made good eventually*, and which drags on the man's existence for some six years more than the 8½ we have alluded to above, or in all about 14½ years, as explained at large in our second letter, pages 601 to 603 of The Builder. But it is shewn, page 626, column 3, that the bonus is as much as 55*l.*; and in the same page, column 1, at the top, we quote the words of the "London and Westminster Society," which says, "the average bonus for such advances being 63*l.* 0*s.* 10*d.* per share;" so that in this case the borrower would receive in cash 56*l.* 19*s.* 2*d.*, making himself answerable for 120*l.* on each share he takes up at this practical valuation of the price current.

In the first case the man takes 70*l.* to pay 120*l.*; in the second 65*l.* to pay 120*l.*; in the third 56*l.* 19*s.* 2*d.* to pay 120*l.* in ten years; the impossibility of which has been fully demonstrated.

This constitutes what is termed *the sale of shares*, "for in full satisfaction of the share or shares he subscribes for of 120*l.* each," "he shall immediatly pay 1*l.* per share in part of the subscription money, and charges payable thereon."* Moreover, "members not wanting money are liable to be ballotted to draw their shares, or be subject to a fine;"† but in "other societies the more general plan is to give power to the directors to dispose of money not wanted by the society in some profitable manner," as in the Bridgwater Building Society, which makes "advances upon notes of hand,"‡ "as the committee shall deem most conducive to the interests of the society."—"We think it highly expedient in societies where competition is allowed, to get a good number of capitalists."§ Here then we have proof of the inference deduced in our last letter, that these are more properly speaking *Loan* than *Building Societies;* and they identify themselves with the money-lending clubs in the manufacturing districts.

Let us now consider the *security for money advanced* by the building societies. From all we can learn the property must be of "sufficient security to the society," or the borrower must find good men and true to join in their common bond for the amount advanced, the parties agreeing "to accept the said share or shares, subject to the payments, rules, and regulations" of the society.

If the party wish to build, one-half of the money shall be advanced when the building is covered in on paying half the premium; and the other half when the premises are finished, on paying the residue of the premium: but if

* Tring Benefit Building Society, pp. 46, 47.
† Idem, p. 48.
‡ Bridgwater Benefit Building Society's Rules—*Investment of Undisposable Funds.*
§ Kerr's Building Societies, p. 32.

the party fail for six nights (monthly) to pay subscriptions, payment, and redemption money, the trustees shall absolutely sell the premises for the most money that can be gotten for them, and all loss shall be borne by the mortgagor. We see nothing objectionable in the party being made answerable to the society for the payments of the subscriptions and other charges, as the same shall become payable, after he consents to take its money at terms which must eventually prove his ruin to "the satisfaction of the solicitors and trustees for the time being."

The following plan has been suggested to render Building Societies really beneficial; and we cheerfully insert it on the principle, *audi alteram partem;* premising that our quotation is the result of its author's laborious calculation:—

"Suppose a member to require an advance of 450*l.*, the following statement will shew the comparison between the present system and that suggested by the writer:—

Present System.		*Proposed System.*	
7½ shares, at 60*l.*	£450	3 shares, at 150*l.* ..	£450 0
the annual payments would be			
Subscription, 7½ shares, at 6*l.*	45	Subscription, 3 shares, at 12*l.*	36 0
Interest, 7½ shares, at 48s.....	18	Interest, 3 shares, at 150s.....	22 10
	£63		£58 10
which, multiplied by 10			9½
would make a total payment of	£630		£555 15
Deduct the sum received by the borrower—	£450		£450 0
shews the actual amount paid for the loan of the money to be	£180		£105 15

"Now, if it were possible for the existing societies to close in ten years, the payments by the borrowers for a loan of 450*l.* would be 4*l.* 10s. per annum less to a society similar to that here suggested, than it would be to any of the existing societies, and there would be a difference in the total payments of 74*l.* 5s. The borrowers who paid the lesser sum would likewise have the advantage of only being required to give security for the amount they actually received; and, in the event of their failure in making their monthly payments, the property would not be sold for more than the balance remaining due of the amount actually advanced.

"In a society formed on this principle, it would be the interest of all the members to prevent the failure of the borrowers; at any rate, if such an event did occasionally occur, it would not have been caused by his connection with the society, or would they be liable to the imputation of having largely benefited by his ruin?"

Transfer of shares.—Shares may be transferred on payment of 10s. 6d. for each share transferred or sold, as a bonus to the society, and subject also to the premium at which the same shall have been purchased, and to all other fines, subscriptions, and charges, payable according to the rules of the society, all of which make a material difference in augmentation of the society's funds, and which we could not contemplate in our previous calculations of the capitalists' profits.

Members withdrawing.—"Protest, if you like," said Lord Ellenborough to William Hone, "and go about your business;" not so the building societies—if a member withdraw, we suppose he has protested—in the first year he shall forfeit *one guinea* per share, in addition to the entrance fee; if within the second year, a forfeiture of 10s. 6d. per share, in addition to the entrance fee, and so on; but "these forfeitures extend not to the widows and children of deceased members, holding not more than two shares in the society."

Power of the directors to borrow money for the use of a society.—This is very questionable, and, we believe, entirely at variance with the letter and the spirit of the Act of Parliament, under which these societies are constituted, though that Act, s. 2, allows of "bonus on any share or shares, for the privilege of receiving the same in advance prior to the same being realized." Capitalists in these societies should not need to borrow; and a banker who would lend, at 4 or 5 per cent., to enable a society to discount "notes of hand," would, in Parliamentary language in the times of George IV., "turn his back upon himself."

We may be associated with that "detestable class of wretches who oppose building societies;"* but we would bear any obloquy if we could reform things amiss in these societies; and shew sensible men, who may be in their direction, that the borrowers are aggrieved, and, we believe, no two justices of the peace in Britain can gainsay our arguments, as to the profits of the lenders and the duration of these societies. It is the abuse, not the use of the thing, we speak about; and we discard all morbid philanthropy for the industrious classes in treating of the equity belonging as well to the rich as to the poor man. We would court justice for both; and we should recommend the directors to print their rules as the *Book of Justice of Building Societies*, and add thereto the *Catechism of Borrower and Lender*.

These observations, in allusion to the reformation of building societies, are suggested by the arithmetic of their managers, not by assumed data of our imaginings; and we find them responded to by the "Fourth Annual Report of the Liverpool Temperance Benefit Building Society," in which the average premium is stated to have been 58*l.* 10s. 6d. a share; and while the society "had not the least difficulty in effecting sales of its *funds*," yet the withdrawals during the past year had increased, and the committee could not look upon this peculiarity in the history of the year gone by without feelings of pain; "but this is ascribed to the pressure of the times, which pervaded in so calamitous an extent every grade, but more especially the industrious classes of the community."

We might bring an array of figures, like the trees in an American wilderness, to dissect the balance-sheets of the several societies we have noticed, and of others we have not space to introduce, but we spare ourselves the trouble, and the societies the pain, this would inflict, being satisfied of this one thing, that the legislature will soon look into the management of these societies; for as sure as "the prayer of the humble pierceth the clouds; and till it come nigh he will not be comforted;" so will the appeal of men yet reach the ears of the legislature, who "will not accept any person against a poor man, but will hear the prayer of the oppressed, and will not despise the supplication of the fatherless, nor the widow when she poureth out her complaint."

In that of Lambeth the borrower is said "to participate equally in the premium and interest given by himself and by all other borrowers," thus "reducing in proportion his amount of premium and interest, till at last, when the deeds of property are returned to him, he will find that he has paid the capital borrowed, *that the premium has become a shadow*,—

——"agnovitque per umbram
Obscuram, qualem primo qui surgere mense
Aut videt, aut vidisse putat nubila lunam.
Demisit lacrimas, dulcique adfatus amore est:
* * * *
'Siste gradum, teque adspectu ne subtrahe nostro,
Quem fugis?'"

"and the interest trifling." But we have done, observing that the people of Lambeth covet domiciles at Kingsland, where they have mortgages in six houses; the city, where they have *one;* Newington, *one;* Lambeth—*proh pudor!* one; and four at Lewisham, which "are mortgaged for 6,600*l.*," or above 576*l.* a piece. And, in the balance-sheet, it is fairly stated that "3,556*l.* are Dr. to premiums on fifty-five shares taken up and secured on property," viz. the thirteen houses aforesaid mortgages on the Cr. side of the account. This, we presume to believe, makes it pretty plain that the bonus is treated as profit which the society has realized by its transaction with the borrower; and when we look at the very small sums allowed surveyors in the balance-sheets of the various building societies, we cannot lend our belief to the words of "W.," who has replied to Greenway Robins, that "Architects and surveyors are the gentlemen who most profit by these societies;" professional men—save and except the lawyers, are not usually men of means to set on foot or sustain such societies; and we therefore still adhere to our opinion, that these societies could not make the advances they lavish without the assistance of capitalists; for to whom else would the Liverpool Banking Company advance 466*l.*, the Hertfordshire Bank 414*l.*, the Reading Bank 994*l.*? Not to the man assuredly who bought 57*l.* for 120 good sovereigns, to be paid within a given time.

We speak without prejudice and in a spirit of reverence in what follows, that the rules of these societies are "as the words of a book that is sealed, which men deliver to one that is learned, saying, Read this, I pray thee; and he saith, I cannot, for it is sealed. And the book is delivered to him that is not learned, saying, Read this, I pray thee; and he saith, I am not learned." Isaiah xxix. 11, 12. Learned men, good men, and men well skilled in commercial dealings, belong to these societies; they are their supporters. All other men who question their management are denounced "traducers" of building societies. But in a great country like Britain this should not be the language applied to these conscientious dissentients, who are not "found where parables are spoken."

We will conclude this letter with a quotation from the proceedings of the Court of Common Sense, which puts the case in a somewhat different point of view from our argument, and leave the reader to adopt which he pleases; especially as the question regards the operation of interest and the duration of the societies:—

"In order to terminate the society in ten years, a payment of 10s. per month, with compound interest and accumulations, must realize 120*l.*; and to accomplish this, the money paid in each year must produce twenty per cent. per annum, as is proved by the following calculation:—

INTEREST REQUIRED BY THE LENDERS.

Payments each year.	Number of years' interest required.	Amount at 20 per cent.	Amount paid with interest at end of 10 years.
£. s. d.		£. s. d.	£. s. d.
1st. 6 0 0	9½	11 8 0	17 8 0
2nd. 6 0 0	8½	10 4 0	16 4 0
3rd. 6 0 0	7½	9 0 0	15 0 0
4th. 6 0 0	6½	7 16 0	13 16 0
5th. 6 0 0	5½	6 12 0	12 12 0
6th. 6 0 0	4½	5 8 0	11 8 0
7th. 6 0 0	3½	4 4 0	10 4 0
8th. 6 0 0	2½	3 0 0	9 0 0
9th. 6 0 0	1½	1 16 0	7 16 0
10th. 6 0 0	½	0 12 0	6 12 0
Sum paid 60 0 0		Interest 60 0 0	Total in 10 yrs. 120 0 0

"The borrowers pay two pounds per cent. on the nominal value of the share—viz., 120*l.*; but as only 61*l.* is received from the society, and the repayment is by monthly instalments, it is actually seven and a half per cent., that is, supposing these societies to terminate in ten years. If they continue for a longer period, the annual payments are to be added to the interest, which is thereby very largely increased.

"If the fines and other extra payments amount to another two and a half per cent., making in all ten per cent., the monthly payments of ten shillings will, if constantly employed (which is very doubtful), in ten years only realize 90*l.*, being but half the profit required to terminate these societies.

"In the Manchester society, those members who did not purchase shares had to pay 110*l.* before they realized the sum of 150*l.*; by the same rule, a monthly payment of ten shillings will, in the same time, only realize 75*l.* The members of the Manchester society paid fourteen shillings and eightpence before they realized twenty shillings, being five shillings and fourpence profit in the pound: and if the members of these societies have to pay in the same proportion, their duration will be fourteen years and eight months."

Fires from Flues and Hot-water Pipes.—In Mr. Braidwood's report on fires during the ten days ending Jan. 1st, it is stated that out of twenty-six which occurred, in six cases the fires were caused by stoves or flues, one by unslacked lime, one by hot-water pipes used for heating the building, one by a malt-kiln, three by the ignition of curtains, and one by the breaking of a melting pot. In the remaining cases the cause was unknown.

The Temporary Exchange.—This building, which was erected about six years ago in the Excise-office yard, Old Broad-street, is to be sold next Wednesday, in one lot, by Messrs. Simson, of King's Arms-buildings. It is 140 feet in length, and 40 feet wide, supported on wood pillars, with wrought-iron girders, and slate roof.

* Kerr's "Advantages to be derived from Building Societies" rule xxii.; (his commentary thereon), p. 73.

ECCLESIASTICAL ARCHITECTURE.

Mr. Wightwick has recently published a letter on the determination of some principle for the establishment of an ecclesiastical style of architecture, expressing the reformed church of England, in consequence of a communication from the secretary of one of the church-building societies, which seemed to indicate the prohibition of "any departure from ancient ecclesiastical example," and of the encouragement given to that prohibition by the Cambridge Camden Society. He says:—

"That the Diocesan Architectural Societies have effected great good in aiding to subvert the 'Carpenter's Gothic' of Batty Langley, it were most unjust to deny: but, if they have done this only to insist hereafter on the close imitation of the mere *models*, rather than of those *motives of fitness*, which guided our old Roman Catholic architects, they will tyrannically impede those progressive movements, which might, ere long, lead to the perfection of a form and style of architecture emphatically expressing the 'True and perpetual Church.'

"The magnificent cathedrals of our ancestors are admirable, from their perfect adaptation to the religious ceremonies which prevailed in the English Church before the Reformation; and it is said to have been in the hope of reviving the popish service, with its processional pageantries, that the Duke of York opposed Sir C. Wren's first design for St. Paul's cathedral, on account of its 'departure from ancient example;' thus precluding the only opportunity which has ever yet been afforded of our possessing a cathedral essentially Protestant."

Mr. Wightwick considers the positive requisites for a church to serve all the purposes of Christian worship as now established in England to be these:—

"First under the head of *Convenience*—

"1. A main space for public worship, &c., wherein a maximum number of persons* shall be commodiously seated without impediment to sight and hearing. Pillars, therefore, and galleries which must be supported by pillars, are prohibited. 2. An altar, as open as possible to the whole congregation, with the least practicable interception by the pulpit and desk. 3. A highly-raised pulpit, and a lower-raised reading-pew or lectern, having one desk for the Prayer-book, looking towards the altar, and another for the Bible, looking towards the people. Also a faldstool for the Litany, in a central position, directly facing the altar. 4. A font, within view of the assembled congregation; or, 5. A baptistery, united with the body of the church. 6. An organ-loft, at the west end of the church, opposite the altar at the east end. 7. Chapter-room, library, vestry, or other offices as required, near the chancel. 8. A tower, or towers, for the reception of bells, and as also useful in attracting the distant observer to the locality of the church.

"Secondly, under the head of *Expression*:—

"9. The general plan to be cruciform, as prominently symbolizing the Christian faith. 10. The visible signs of Trinitarian belief to be indicated, wherever practicable, consistently with the unity of the whole. 11. The sentiment of Infinity to be observed in the adoption, or invention of a style most conducive to it, as affording the best opportunities for proportional loftiness and length of perspective. 12. The utmost respect to be manifested for our ancient examples, in the consideration (and, if practibable, in the adoption) of so much of their form, style, and particular features, as may be pure, and interesting in their connection with the progressive history of the 'Holy Catholic Church;' and equal care to be taken in avoiding the repetition of those architectural dispositions and decorative details which are proper only to the Romish Church."

In reference to Pointed architecture, and its fitness for ecclesiastical buildings, he says,—

"The movement which Pointed architecture has now taken, as most suitable to the Christian temple, derives additional impetus when we consider it as the positive offspring of Christianity itself. Churches have been built in almost all styles; but the Gothic Pointed architecture of Catholic Europe is exclusively Christian in its origin, progress, and perfection. In form, in detail, in mysterious effect, it proclaims the spirit of which it is the sign.

"But, by that same authority under which our Saxon architects differed from those of the Constantinal era, by that under which the designer of the first Pointed church differed from the matured and established Norman model, and by that under which were practised all the successive modifications of Pointed architecture, from the Temple Church to the chapel of King's College at Cambridge, we claim the privilege of allowing our regard for present necessities and altered circumstances, to co-operate with our respect for ancient usages and forms, in the production of what shall have both a retrospective and prospective merit; nor will we be told that, because we may find it imperative to deviate from 'ancient example' in general form and proportion, we shall therefore exhibit a 'departure' from the *spirit* of our pious ancestors. We have looked minutely into the merits of Pointed architecture, and have vainly sought to improve on its essential principles and details, whether of construction or ornament; but we have now to provide for certain requirements which did not exist when our Gothic churches were built, and to avoid the mere imitations of such forms, &c., as are no longer necessary, but are rather hostile to our reformed worship."

* It has been found, by experiment, that not more than 2,000 sitters can be conveniently placed within a church (even where there are galleries), so as to have the advantage of perfect hearing; the sight being, of course, rendered imperfect by the pillars supporting the galleries.

ENGLISH SKILL AND CAPITAL ENLIGHTENING THE CONTINENT.

If we do borrow from our foreign neighbours singers, musicians, *modes*, and the polka, they have to thank us in return for much increase of comfort, and for the means of social advancement. Amongst the advantages conferred by England on continental towns there is none more evident than those afforded by the supply of gas.

In France, Germany, Belgium, and Holland, English capital and English skill have laid down pipes, built manufactories, and still direct the supply of light to numerous towns. In Holland it was some time before the authorities could be induced to afford facilities for such undertakings, fearing the danger which might arise from opening trenches in their uncertain soil, and the difficulty of passing pipes through the canals and basins which occur constantly; but experience has shewn that these fears were groundless.

The last town visited by English enterprise for this purpose is the Hague, where the works, commenced hardly six months ago, were completed only a few days since. The local papers are full of compliments to English skill. Honour, says one of them, to the able and active engineer, Mr. Shepherd, who has directed the whole, and realized with so much talent and rapidity the idea of this vast undertaking! Honour to the clever manufacturers, Messrs. Goldsmid and Co., who have made so complete all the machinery of this fine establishment! and honour to our Ediles, who, enemies of routine and conquerors of prejudice, have given us the advantage of a useful discovery. The Hague is now the equal of the great cities of Europe,—like them, she too has a sun for the night.

New Lunatic Asylum, Somerset.—At the Quarter Sessions held last week at Wells, a report from the Lunatic Asylum Committee was read. It stated that every thing was now nearly complete for the conveyance of the land selected as the site of the asylum, and that they had contracted for an additional four acres of land, which were considered necessary. They had advertised for plans for the building, but circumstanees over which they had no control had delayed the appearance of the advertisements, and complaints had been made that the time fixed for receiving plans was too short; it had, therefore, been extended to the 22nd of January. The committee would have increased difficulty in their choice of a plan, unless they knew the amount of money which would be granted; they were bound by the 26th section of the 9th Geo. 4, c. 40, to fix the sum which might be expended; and from the inquiries which the committee had made, they entertained the confident hope that 30,000*l.*, the sum formerly stated as required, would not be exceeded.

FIRE-PROOF HOUSES.

The attempts which have been made to render houses fire-proof are so intimately connected with the construction of dwellings, that it will be proper to give a few brief details on the subject. There are many difficulties attending these attempts; for so long as wood forms the chief inner frame-work of a house, there will always be considerable liability to destruction by fire. Most of the proposed plans have had relation to the coating of the wood with some substance which should render it less inflammable, while others have been directed rather to the rejection of combustible substances from the list of those used in house-building.

So long back as 1775, Mr. Hartley made several trials in order to test the efficacy of a method invented by him for that purpose. Thin iron plates were nailed to the top of the joists: the edges of the sides and ends being lapped over, folded close, and hammered together. Partitions, stairs, and floors were proposed to be defended in the same manner. The plates were so thin as not to prevent the floor from being nailed on the joists in the same manner as if the iron were not used; and the plates were kept from rust by being painted or varnished with oil and turpentine. Mr. Hartley had a patent for this invention; and Parliament voted a sum of money towards defraying the expense of his numerous experiments. It does not, however, appear that the plan was permanently adopted.

About the same period, Lord Mahon, afterwards Earl Stanhope, a nobleman possessing a highly inventive tact in mechanical matters, brought forward another method having the same object in view. This method was of a three-fold character, comprising *under-flooring*, *extra-lathing*, and *inter-securing*.

The method of under-flooring is either single or double. In single under-flooring, a common strong lath of oak or fir, about one-fourth of an inch thick, should be nailed against each side of every joist, and of every main timber, supporting the floor which is to be secured. Other similar laths are then to be nailed along the whole length of the joists, with their ends butting against each other. The top of each of these laths or fillets ought to be at an inch and a half below the top of the joists or timbers against which they are nailed; and they will thus form a sort of small ledge on each side of all the joists. These fillets are to be well bedded in a rough plaster when they are nailed on, so that there may be no interval between them and the joists; and the same plaster ought to be spread with a trowel upon the tops of all the fillets, and along the sides of that part of the joists which is between the top of the fillets and the upper edge of the joints. In order to fill up the intervals between the joists that support the floor, short pieces of common laths, whose length is equal to the width of these intervals, should be laid in the contrary direction to the joists, and close together in a row, so as to touch one another; their ends must rest upon the fillets, and they ought to be well bedded in the rough plaster, but are not to be fastened with nails. They must then be covered with one thick coat of the rough plaster, which is to be spread over them to the level of the tops of the joists; and, in a day or two this plaster should be trowelled over, close to the sides of the joists, without covering the tops of the joists with it.

In the method of double-flooring, the fillets and short pieces of laths are applied in the same manner as here noticed; but the coat of rough plaster ought to be little more than half as thick as that in the former method. Whilst the rough plaster is being laid on, some more of the short pieces of laths must be laid in the intervals between the joists upon the first coat, and be dipped deep in it. They should be laid as close as possible to each other and in the same direction with the first layer of short laths. Over this second layer of short laths there must be spread another coat of rough plaster, which should be trowelled level with the tops of the joists, without rising above them. The rough plaster may be made of coarse lime and hair; or instead of hair, hay chopped to about three inches in length may be substituted with advantage. One measure of common rough sand, two measures of slacked lime, and three measures of chopped hay, will form in general a very good proportion, when

sufficiently beaten up together in the manner of common mortar. The hay should be put in after the two other ingredients are well mixed up together with water. This plaster should be made stiff; and when the flooring boards are required to be laid down very soon, a fourth or fifth part of quicklime in powder, formed by dropping a small quantity of water on the limestone shortly before it is used, and well mixed with this rough plaster, will cause it to dry quickly. If any cracks appear in the rough plaster work near the joists, when it is thoroughly dry, they ought to be closed by washing them over with a brush wet with mortar wash; this wash may be prepared by putting two measures of quicklime and one of common sand into a vessel, and stirring the mixture with water till the water becomes of the consistence of a thin jelly.

Before the flooring boards are laid, a small quantity of very dry common sand should be strewed over the plaster work, and struck smooth with a hollow rule moved in the direction of the joists, so that it may lie rounding between each pair of joists. The plaster work and sand should be perfectly dry before the boards are laid, for fear of the dry rot. The method of under-flooring may be applied to a wooden staircase, but no sand is to be laid upon the rough plaster work. The method of extra-lathing may be applied to ceiling joists, to sloping roofs, and to wooden partitions. The third method, which is that of inter-securing, is very similar to that of under-flooring; but no sand is afterwards to be laid on. Inter-securing is applicable to the same parts of a building as the method of extra-lathing.

Such is a general outline of the modes proposed by Lord Mahon for rendering houses fire-proof; in which it will be seen that the safeguard consists in the use of a non-combustible material with, and among, and between the pieces of wood forming the frame-work of a house.

The more recent attempts to gain the same object by means somewhat similar have been very numerous; some of which we may here notice as examples of the whole.

An American patent was granted in 1837 to a Mr. Louis Pamboeuf, for the invention of a fire-proof paint. The mode of preparing it is thus described. A quantity of the best quicklime is selected, and slacked with water in a covered vessel; when the slacking is complete, water, or skimmed milk, or a mixture of both, is added to the lime, and mixed up with it to the consistence of cream. When milk is not used, a solution of rice paste is employed, obtained by boiling eight pounds of rice to every hundred gallons of paint. When the creamy liquor is prepared, alum, potash, and common salt are added, in the proportion of twenty pounds of alum, fifteen pounds of potash, and a bushel of salt, to every hundred gallons of the paint. If the paint is to be white, six pounds of prepared plaster of Paris and the same quantity of fine white clay are added to the above proportions of the other ingredients. All these ingredients being mingled, the mixture is strained through a fine sieve, and then ground in a colour-mill.

When roofs are to be covered, or when crumbling brick walls are to be coated, fine white sand is mixed with the paint, in the proportion of one pound to ten gallons of paint; this addition being made with a view to giving the ingredients a binding or petrifying quality. In applying this paint, except in very warm weather, it is prepared in a hot state; and in very cold weather precautions are necessary to prevent it from freezing. Three coats of this paint are deemed in most cases sufficient.

In another variety of this paint oil is the chief liquid ingredient. To prepare it forty gallons of boiled linseed oil are mixed with slacked lime to the consistence of a paint; and to this are added two pounds of alum, one pound of potash, and eight pounds of common salt; or good wood-ashes may be substituted for the potash. This paint is used in the same manner as other paint; and any colour may be obtained by adding the usual pigments to the composition.

The preparation of a kind of paint containing alkalies seems to have been a favourite measure among inventors of "fire-proof" composition; for many of the modern projects have had this for its basis. But in most cases there have not been means for determining the degree of efficacy possessed by these compositions.

Perhaps the mode in which we may more consistently look for the practical attainment of the object in view is by the adoption of some improved mode of building, in which either wood is not employed at all, or, where sparingly used, measures are taken to shield it from the action of fire. One such method is Leconte's, described as follows.

This plan consists in the employment of iron frames to receive concrete matter for forming the walls. The basement story of the building is constructed according to the ordinary methods up to one foot or more above the ground. On the basement so constructed is to be erected the patent wall, formed of frames entirely of cast-iron, in one or more pieces, or a combination of cast-iron and wrought-iron plates. These frames are to be set one on the other until the required height is attained, the necessary stability being obtained by means of steady pins at the corners of one frame fitting into holes made in the corners of the frame which is opposed to it. Suitably-shaped frames are employed for the internal partition walls, and for doorways, window-frames, &c. The flues of the chimneys are formed of iron or other metal pipes, placed in the thickness of the walls. When the required elevation is obtained, a concrete of any suitable material is poured into the framing, and fills up the vacant space, giving firmness and solidity to the structure; the concrete being made of gravel and lime. To give steadiness, lead is to be introduced between the joinings of the iron-work. The doors and window-frames are to be fastened to the walls by any of the usual known methods. The main beams and cross beams of floors and roofs may be of cast-iron, or formed of iron and wood; or they may be formed of one or more pieces of plate-iron, bent up into an oval form, and straightened by an iron or wooden bar passing through them lengthwise, the upper edges of the metal being turned over to increase the strength. In the interval between the beams there are to be iron rods running in various directions, and supporting a metallic wire-work, which forms the foundation for the ceiling. Similar wire-work is to be employed in lieu of lathes for all plaster surfaces. All the iron-work is be painted over with some suitable composition to prevent oxidation.

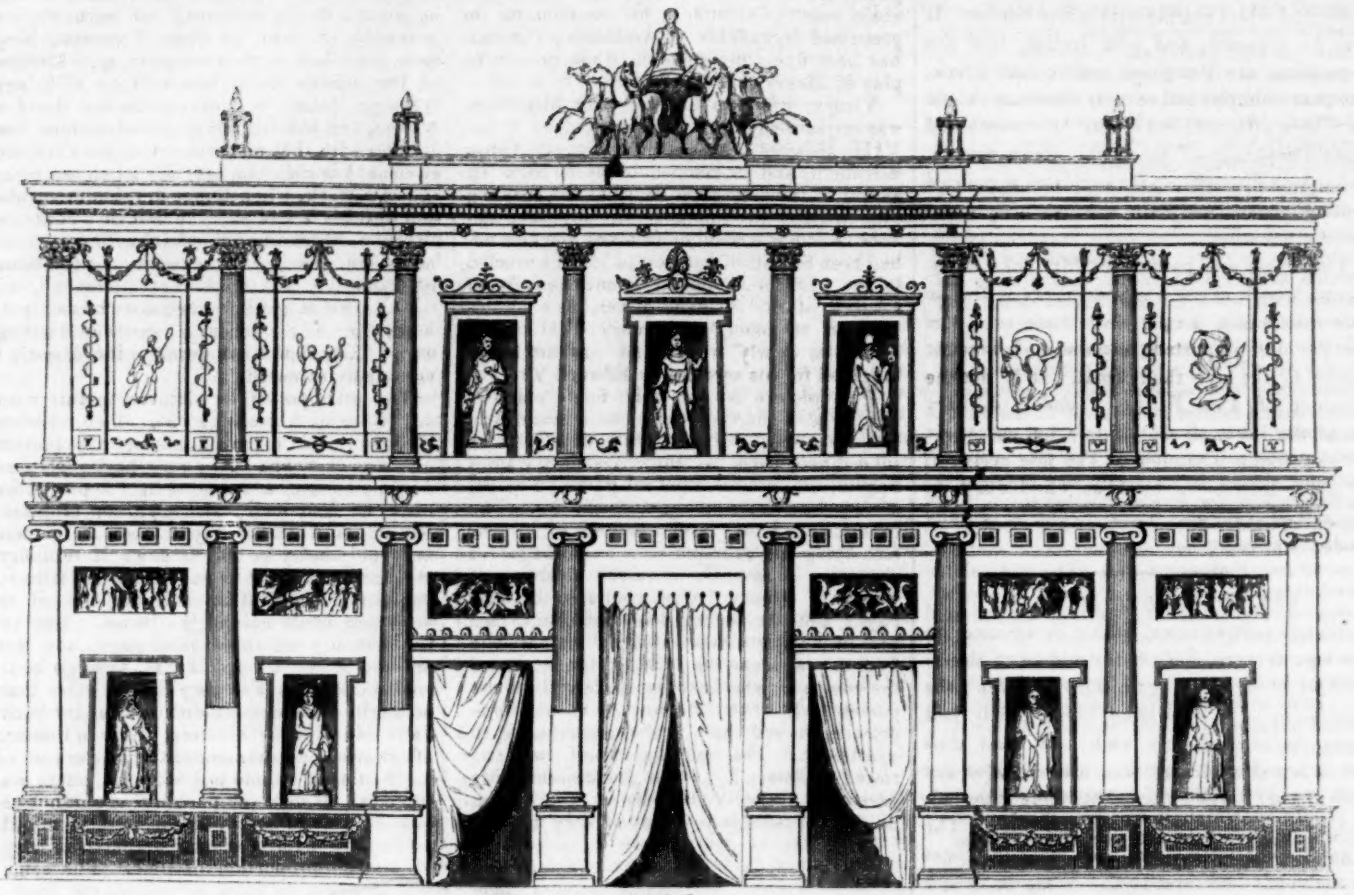
A plan for the same purpose has been proposed by Mr. Varden as follows:—"It appears probable that common fir or oak joists with their lower edges chamfered, and coated over with a mixture of alum, black lead, clay, and lime, or some similar composition, would (if closely floored above with earthenware tiles, bedded all round into the plastering, the joists being made air-tight) resist the action of flames, at least for a considerable time. Fire could not descend through such a flooring so as to communicate with the rooms below, till the tiles used in it had become red-hot; neither could it ascend until the tiled floor above gave away from the burning joists; which if coated, as proposed, would not take fire from below till the tiling over them acquired a sufficient heat to cause the distillation of the turpentine from the wood. In general, there is not furniture enough of a combustible nature in any room to do this. The battening against the outer walls might be of larch, as that wood burns less freely than most others; but if the walls were brick, or lined with brick, battening of any kind will be unnecessary. If this plan should be thought likely to answer the end proposed, houses built in the common manner might be altered at a moderate expense, by taking up the boarded floors, and substituting earthenware tiles."

Another plan, proposed by Mr. Frost, consists in forming the floors of rooms of hollow earthenware tubes embedded in cement, combined so as to form a sort of flag-stone, covering the whole floor. These hollow tubes are squares in section, about an inch and a half on the side externally, with a tubular space of an inch and quarter on the side internally; they are formed of brick earth, prepared in a superior manner, and pressed through moulds by machinery; and their length is about two feet. In forming a floor of these tubes, the centering, after being prepared and fixed in the usual manner, is first covered with a coating of cement of a quality sufficiently fine to form the ceiling of the apartment to be floored over; and if it is desired that there should be mouldings or ornaments in this ceiling or its cornices, moulds for them can be placed in the centering, so as to form a part of it. One or two coats of cement having then been laid over the centering, a stratum of the square tubes laid side by side, and breaking joint, is next embedded in fine cement, and the interstices between them also filled in with that material. One thin coating of cement is then laid over the whole stratum; and in a week, when this is dry, another stratum of tubes is laid over the first in a contrary direction, bedded and filled in with cement as before, and finished by a coating of the same material.

Mr. Loudon gives descriptions of two methods, the one for building houses in general fire-proof, and the other for imparting that property to houses already built. He considers the two main points for the consideration to be, to have staircases of iron or stone, or both combined, and to avoid having any hollow partitions or floors. A house having a stone or iron staircase, and having all the partitions either of four-inch brickwork, or of brick nogging, in whatever way it might be set on fire, could hardly be burned down, if ordinary exertions were made to extinguish the flames. One apartment might be set on fire, but before the flames could spread to the one under or over it, or to a staircase adjoining it, the fire might be extinguished. In a house so constructed there would be no piece of timber that was not in close contact with mortar, at least on one side; and all the strong pieces of timber, such as joists, rafters, quartering in partitions, &c., would be closely imbedded in mortar on two sides. Where the partition could not be made entirely of brick, the interstices might be filled up with a mortar prepared of clay with a small proportion of lime. The same material might be filled in between the joists, and where it was desired to render the roof fire-roof, the rafters might be made of iron, or the space between wooden rafters might be filled in with thin mortar. This mode of proceeding would lengthen the time required for the drying of a newly-built house, and would also add somewhat to the expense; but it is conceived that the increased safety would more than counterbalance these inconveniences.

In respect to the means of giving a fire-proof quality to a house already built, Mr. Loudon remarks:—"All the interstices between the floors, in the partitions, and in the roof, where there was a ceiling formed to the rafters, might perhaps be filled in with earthy matter in a state of powder. This powder might be clay or loam mixed with a small proportion of Roman cement; it might be injected into the vacuities, through small orifices, by some description of forcing-pump or bellows, which, while it forced in the powder, would permit the escape of the air; and, while this operation was going forward steam might be injected at the same time so as to mix with the mortar and be condensed by it; by which means the whole mass would be solidified with a minimum of moisture. In short, in rendering houses fire-proof, the next important object to using fire-proof materials, is that of having all the walls and partitions, and even the steps of wooden staircases, filled in with such materials as will render them in effect solid. On examining into the causes of the rapidity of the spread of the flames in London houses when on fire, it would almost invariably be found, that whatever may have occasioned the fire to break out, the rapidity of its progress has been in proportion to the greater or less extent of the lath and plaster partitions, the hollow wooden floors, and the wooden staircases. Were the occupiers of houses sufficiently aware of the danger from lath and plaster partitions, especially when inclosing staircases, they would never occupy such houses, or, if they did, they would not give such rents for them as they would for houses with brick-nogging partitions. It appears to us to be the duty either of the general or local government or police to see that no houses are built without stone or iron staircases; and that no partitions and floors are made hollow; or, if they are, that the materials should be iron and tiles, or slates, or stones, or cement, or other earthy composition."—*The Useful Arts Employed in the Construction of Dwelling Houses.*

THE GREEK SCENE AT COVENT GARDEN THEATRE.



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THE GREEK SCENE AT COVENT GARDEN THEATRE.

AMONGST the Greeks and Romans, the theatres were regarded as important public buildings. Every citizen was entitled to admittance, and they were consequently required to be of large size. An arbour constructed of the branches of trees, or if in a town, a rude scaffolding, served in the early ages of Greece as a scene for dramatic representations; but these soon gave place to vast and magnificent structures in all the Grecian cities. As regards the decorations of them, there are no actual examples left; but from accounts which remain, and comparison with the theatres in Italy, it is believed that although the Greek and Roman theatres differed in some minor arrangements, they were similar in the general distribution of the parts, and were used in the same manner. The most perfect specimens remaining of the Roman theatre are those at Pompeii and Herculaneum.

Their form was semi-circular, and consisted of two parts, the *cavea* and the *scena*. The former was appropriated to the audience, and had seats rising one above the other, of such size and height, that the back of the seat of one row served as the foot-place for the row above. The seats were in three divisions, the lower being appropriated to the magistrates, the middle to the people, and the topmost to the women. The *scena* had two main divisions, the *proscenium*, or stage, which the actors occupied, and the *orchestra*, for the bacchanals and chorus. The stage was very shallow, as compared with that of our own theatres; the back wall of it formed the scene, and was nearly the only part of the Greek theatres which was *erected*, as they were generally excavated in a hill, and so formed at comparatively little expense.

The theatre was open at the top, but was at times protected by a *velarium*, or awning. This was sometimes of silk, but generally of woollen cloth. It is stated that Nero once covered the Coliseum with a purple *velarium* sprinkled with gold stars to represent the heavens, and having the chariot of the sun embroidered upon it. The *orchestra* was semi-circular, and spread out from the stage to the first row of seats, and was in reality, therefore, in the position of our pit. In the centre of it was an altar inscribed to Bacchus, to whom theatres were dedicated, because the origin of dramatic entertainments was found in the solemn processions in honour of Bacchus and Ceres, which took place at the times of harvest and vintage.

Moveable scenes were not ordinarily introduced, but it is stated there was on each side of the stage a triangular frame for painted representations, which revolved on a centre, similar to some advertising carts which may be seen in our streets.

As a conventional mode of informing the audience the relative position and character of the actors in the piece, the latter were required to enter and leave the stage by particular entrances. The scene had a principal door in the centre, called the royal door, through which only the king, or chief actor, entered and retired; this was often situated in a semi-circle, and was very richly decorated. On the right of this was a second door of less size and importance, for the next principal characters; and on the left a third door for the inferiors. Joining each end of the fixed scene was a lower wall, at right angles, in which on both sides was a door: that on the right leading to the city, for the citizens, &c., and that on the left, leading to the country, for messengers and strangers. The choruses entered the orchestra by doors at each side of it, on one side the *strophe*, on the other the *antistrophe*.

The scene was decorated with niches, containing statues, and, no doubt, as at Pompeii, so in Greece, it was painted in polychromy; as were the other chief buildings of antiquity, both Egyptian, Greek, and Roman. On the stage near the royal door was an altar to Apollo, and behind the scene were gardens and colonnades, sometimes a temple, visible when the curtains of the doors were withdrawn. The access to the principal parts of the theatre was often from the back.

The theatre always faced the sea, if a sea was near, even though it might not be visible. The reason for this arrangement probably was that as a breeze generally prevails in the after part of the day from the sea, the voice of the actors was thus carried to the audience.

We are led to make these few general remarks on the Greek stage by the production of a scene at Covent Garden Theatre for the representation of the "Antigone" of Sophocles, wherein the ancient arrangement is adhered to, as far as circumstances would allow, and which we recommend our readers to see. The manager very wisely consulted an architect for the design, and the result is a degree of completeness and architectural propriety not often found on the stage. As the pit could not be given up to the choruses and bacchanals, the front of the stage is set apart as the orchestra, and the action of the piece takes place on an elevated platform behind, from the level of which rises the fixed scene. The scene is represented by the engraving at the head of this article (made from the original drawing), and shews the principal and two secondary doors mentioned in the previous description. Cleon and his son use the centre door, Antigone and her sister the right-side door, and the sages and guards the left-side door. The side-walls, not shewn in the engraving, contain the fourth and fifth doors before alluded to, from one of which the dead body is carried in as from the country. The strophe enter at the right side of their orchestra, and the antistrophe the left; the altar of Bacchus is in the centre of it.

The scene is decorated with statues of Melpomene, the muse of tragedy, Clio, the muse of comedy, Apollo, bas-reliefs, &c. Tripods are painted on the doorposts, figures in the panels, and the whole of the architecture is

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polychrome. Tripods are burning on the top of the scene, and in the centre, terminating the whole, is a car of triumph. The orchestra and stage present the effect of a pavement of black and white marble with a fret border. It may be objected, and with justice, that the decorations are Pompeian rather than Greek, and that a simpler and severer character should have been attained; but it must be remembered that no examples of the Greek scene remain, and that in Pompeii, so far as related to painted decorations and sculpture, the Greek style and manner prevailed.

The scene was painted by Mr. John Macfarren, who is entitled to special praise for the care with which the parts are made out; this was the more important, as the scene is brought closer to the eye than usual. It is not the province of THE BUILDER under ordinary circumstances to allude to actors, but we cannot avoid pointing attention to the fine series of attitudes introduced by Miss Vandenhoff in the part of Antigone, which might be usefully studied by sculptors.

BARBER-SURGEONS' HALL.

BARBER-SURGEONS' HALL is situated on the west side, and near to the middle of Monkwell-street, in Cripplegate ward, London; the foundation of the building being partly laid upon the ancient City wall. At what time the original structure was erected does not appear; but it was enlarged at different periods down to the time of Charles the First. The Theatre of Anatomy was built by Inigo Jones in the years 1636 and 1637. Walpole calls it "one of his best works." This theatre, through being a detached building, escaped conflagration, but all the other parts suffered in the great fire of 1666; and the theatre itself, which had an elliptical cupola, and was decorated with figures of the seven liberal sciences, —the signs of the Zodiac, cedar benches and doors, &c.—was pulled down about the year 1783, the company having no use for it; and three houses were soon afterwards erected upon its site. The present buildings were erected by subscription within a few years after the fire, and are of brick; the entrance and dwelling of the clerk fronting the street are separated from the other parts by a small paved court. The *hall* is a good room, but not large; the west end is semicircular, and remarkable from having formed the interior of one of the towers (or bulwarks as they are called in the minutes) that defended the city wall. Here are two full-length paintings of human figures, shewing the disposition of the muscles, &c.

The *court-room*, which has a small elliptical cupola in the centre, built in 1752, is an apartment affording much interest, from the various pictures with which it is decorated. The principal of these is the celebrated piece by Holbein of *Henry the Eighth delivering the Charter of the Barber-Surgeons to the Court of Assistants and Company*. This picture, which is painted on panel, and in a very excellent state of preservation, measures ten feet two inches in length, and six feet in width. The bluff sovereign is represented in his royal robes, and crowned, seated in a chair of state, and holding in his left hand a sword erect, resting upon his knee; on each side are the principal members of the company, kneeling, with others behind standing; and the king is in the act of presenting the charter with his right hand to Thomas Vicary, the then master. The names of thirteen of the chief members are above their heads. All are in gowns trimmed with fur; the three on the right of the king represent the Doctors Chamber, Butts, and Alsop, all of whom, at the time of the giving of the charter, were past masters of the company. Dr. John Chamber was Henry's principal physician, and Dean of St. Stephen's College, Westminster, where he built the curious cloister, a part of which remained in the speaker's house until destroyed by fire a few years since; he has on a close cap, and his hands are wrapped in the large sleeves of his gown. Dr. William Butts, who was also king's physician, is also in a cap, and has a gold chain over one shoulder; his conduct on the presumed degradation of Archbishop Cranmer has been finely portrayed by Shakspere in his play of Henry the Eighth.

Vicary, who has a gold chain like Butts, was serjeant-surgeon to the sovereigns, Henry VIII., Edward VI., Queen Mary, and Queen Elizabeth, and is reputed to have been the author of the first work on Anatomy that was ever written in the English language. Sir John Ailife was also an eminent surgeon, and had been Sheriff of London in 1548: according to the inscription on his monument in the Church of St. Michael Bassishaw, he was "called to court," by Henry VIII., "who loved him dearly well," and was afterwards knighted for his services by Edward VI.

This picture is not only finely coloured, but is also finished with such carefulness and minuteness of pencilling, that even the subordinate parts, as the rings on the king's fingers, the ermine of his robes, &c., will bear a very close examination, and still appear true to nature. It is remarkable likewise from furnishing an example of a beginning of an alteration in costume in respect to shirts, the wrists of Henry being encircled by small *ruffles*, and the necks of several of the members displaying a raised *collar*. An engraving from it was made in 1736, at the expense of the company (who have the plate still in their possession), by B. Barrow, whose reduced drawing in red chalk is also preserved in this apartment. The painting itself was borrowed by James I. (whose grandmother, Margaret, was Henry VIII.'s sister), and his letter on the occasion is yet preserved by the company; it asserts that "the portrait of Henry was both like him and well done."

On the same side of the room with this picture, are two excellently painted whole-lengths, said to represent "A Spanish Gentleman and a Lady, his sister," but unknown, and a mezzotint head of John Paterson, Esq., formerly clerk to this company, and Member of Parliament for Ludgershall, in Wiltshire. This gentleman was deputy for the Ward of Farringdon-within; he projected various useful plans for the improvement of the City, and was the principal means of the streets being paved with Scotch granite, &c. in the regular way, which universally prevailed until the recent introduction of wooden blocks. He presented the company with a very beautiful painting of a Duchess of Richmond, said to be by Sir Peter Lely, but more probably by Vandyke. The Duchess is represented sitting, with a lamb and olive branch: the drapery is very finely coloured.

The principal other pictures in this room are Charles II. sitting; Mr. Lisle, barber-surgeon to that monarch; Sir John Frederick, who was sheriff in 1655; Sir Charles Bernard, surgeon to Queen Anne; Inigo Jones, a fine head, by Vandyke; Mr. Ephraim Skinner; Edward Arris, Esq., an alderman of London; and the celebrated Sir Charles Scarborough, chief physician to three sovereigns, Charles II., James II., and William III., and one of the first mathematicians of his time. The two last portraits are in the same piece, and were ordered to be "set up (that is, painted) in the void table" in February 1654. Dr. Scarborough was chosen anatomical reader in this hall on the 12th of October, 1649, and shortly afterwards he commenced the delivery of his highly-famed anatomical lectures, and continued them with great approbation for many years; he has the reputation of being the

ENTRANCE TO BARBER-SURGEONS' HALL.

first person who in discourses on the muscles demonstrated their uses and power by geometrical and mechanical illustrations. He is represented "dressed in the red gown, hood, and cap of a doctor of physic in the act of lecturing, with one hand on his breast, the other a little stretched out. On the left is another figure, Mr. Alderman Arris, dressed in the livery gown, holding up the arm of a dead subject, which is placed upon a table and partly covered with a sheet, the sternum, or that part of the breast where the ribs meet, being naked and laid bare, so that the pectoral muscles are seen." Under the picture is an inscription in Latin which was composed by Dr. Thomas Arris, M.P. for St. Albans in 1661, and son to Mr. Alderman Arris, the latter of whom bequeathed the sum of 510*l.* for founding the muscular lecture in the hall.

H.

[The engraving on the other side represents the entrance in Monkwell-street to the court-yard in which the Barber-Surgeons' Hall stands. The arms of the company are protected by a semi-circular canopy supported on carved consoles, which serves likewise to protect from the rain those who may be waiting for admittance. Under the arms is the date 1671, with the words *De Præscientia Dei.* The foliage on the lintel, represented at large by the annexed engraving, is well carved. A gateway of similar character may be seen at the entrance to New-inn, Wych-street, Strand, but there the canopy is concave inside, and is ornamented simply with foliage, and a shield on the face of it.

Monkwell-street and its immediate neighbourhood present a very different appearance from the more frequented parts of the city, although immediately adjacent, and serve to induce in the contemplative mind many recollections of *old* London. The name of the street itself records the well belonging to a hermitage originally on the site.* Nearly opposite to the hall are twelve almshouses founded in 1578 by Sir Ambrose Nicholas, and rebuilt shortly after the great fire. And at the north end of the street are "Lamb's Chapel" and Almshouses, originally the Hermitage of St. James-on-the-Wall, above referred to. Then you see written, "Aldermanbury Postern Chapel," and in another direction the "Barbican." On coming suddenly on St. Giles's Church, Cripplegate, you remember that immortal John Milton lies buried there, and wander on full of pleasant thoughts and associations, till you come to Grub-street, and so have your ideas diverted into another course.—Ed.]

* Malcolm's "*Londinium Redivivum*," vol. ii.

SCAGLIOLA, OR THE ART OF IMITATING MARBLE.

The art of manufacturing scagliola, or imitation-marble, was well known to the ancients; although chiefly confined to the pure white or *marmoratum opus*, and *albarum opus*, mentioned by Pliny, and of which the statues, busts, basso-relievos, and other ornaments of architecture were composed. The cements of the Egyptians employed in coating the walls of the tombs, and forming the ground-work of their paintings, also partake of the character of marble. In modern times the art of imitating marbles has been carried to a far higher state of perfection, particularly in Italy, and some parts of France and Germany; and the imitations of many of the precious marbles, such as sienna, brocatello, jasper, porphyry, verde antique, &c. exhibit an astonishing degree of beauty of perfection and finish. In England this art is comparatively unknown, having almost sunk into disuse in consequence of the perishable nature of the material, its insecurity when employed as pillars having to bear a heavy super-incumbent weight, its liability to damage, ready absorption of damp, and its expense, which, although trifling when compared to marble, is still much higher than is warranted by the nature of the material.

It is evident that this truly beautiful art is open to great improvement, and experience tells us there is something wanting beyond that of mere skilful imitation and beauty of finish, for after all it is simply lath and plaster with an exterior coating, rather harder, it is true, than the rest, but still incapable of resisting the influence of moisture or the slightest external violence. By the present imperfect process the plaster of scagliola work is produced by applying a pap of finely-ground calcined gypsum, mixed with a weak solution of Flanders glue upon any figure formed of laths nailed together, or occasionally upon brickwork, and bestudding its surface while soft with splinters of spar, marble, granite, bits of concrete, coloured gypsum, or veins of clay in a semi-fluid state. The substances employed to colour the spots and patches are the several ochres, boles, *terra di sienna*, chrome yellow, &c. The surface of the column is turned smooth with a lathe, polished with stones of different fineness, and finished with some plaster pap to give it lustre. Pilasters and other flat surfaces are smoothed by a carpenter's plane with the chisel finely serrated, and afterwards polished with plaster by friction.

By the above process the scagliola manufacturer, with a vast deal of labour employed in the final polishing, is enabled to turn out pillars and pilasters of great magnitude and beauty of polish; but the glue which is the cause of the gloss, is also a cause of its subsequent dulness and decay when it becomes exposed to moisture and damp air. Again, by employing plaster of Paris alone the manufacturer is subject to great loss by waste of material, in consequence of its setting too rapidly, or of the coagulating property of the burnt alabaster being very much impaired or lost by the powder being kept too long, especially if in the open air, before it is made use of, for when it has once been suffered to grow hard, it is no longer serviceable, nor can it be made so, by any known process of burning.

The first and most important step towards improving the art, so as to ensure durability, is by employing more substantial materials in the body or ground-work than are at present used. The second consideration is to substitute a cement of mixed qualities instead of pure plaster of Paris or burnt alabaster, so as to ensure the requisite strength and density of the material, and to enable the artist to finish off the polishing without the use of glue or any other substance which has the property to absorb, and thereby cause the rapid decay of the work; greater hardness is also essentially requisite to avoid moisture, the chipping, indentations, and scratches to which it is now so very liable.

For pillars of magnitude, pedestals and pilasters, a core of rough brickwork might be used to great advantage instead of the present lath and plaster, the bricks being cemented together, and roughly covered in by one of the cheap durable cements commonly in use, or by a mixture of lime, oxide of iron, and manganese, similar to Parker's cement, which has the effect of setting rapidly even under water. Mortar made with about five parts of flint powder, one of shell-lime and the necessary quantity of lime-water and molasses, well triturated together, will make an exceedingly fine and durable base on which to dispose the colours, and if properly used and followed up with an outer coating composed of fine shell-lime, flint powder, milk, and eggs, will assume the hardness and capability of polish of marble. The room in which these works are carried on should be kept at a warm temperature, and great care should be taken under all processes of scagliola work to exclude the atmospheric air as much as possible, also that the stucco should be free from saline impurities, contain some cohering body, and be capable of acquiring hardness gradually until it become of stone-like quality.

The art of making plasters of mixed qualities, to be employed in modelling statues, busts, and other works of architecture, instead of using pure plaster of Paris, is unknown to us. The Romans paid great attention to these matters, and the ancient plastering preserved to this time, where it has not met with violent blows or injuries from accidents, is still as firm and solid, as free from cracks or crevices, and as smooth and polished on the surface as if made of marble; the bottoms and sides of their aqueducts were made of plaster, which has endured many ages without decay. Again, the roofs of houses and the floors of rooms at Venice are covered with a sort of plaster, made at later date, and yet strong enough to endure the sun and weather for several ages without spoiling or cracking, and without much injury from the feet. But the greatest attention perhaps is paid to this subject by the natives of the East Indies, who, for their finer cements, which are capable of receiving a most exquisite polish, use ghee (butter in its oily state), oils, jaggery, and other to us expensive ingredients. At Madras fifteen bushels of pit sand well sifted are added to fifteen bushels of stone lime; this is slaked in the common manner, and so laid two or three days together. Twenty pounds of coarse sugar or molasses is dissolved in water, and the mortar is sprinkled with the liquor, which is then beat up together and well incorporated, and afterwards let to lie in a heap. A peck of *gram* (similar in nature to our coarse gray pea) is then boiled to a jelly, and the liquor strained and preserved. A peck of *mirabolans* is also boiled, and the liquor set aside; the three waters are then added together. The mortar beaten up, and, when too dry, sprinkled with this liquor, proves remarkably good for laying bricks or stone, keeping some of the liquor always at hand for the workman to wet his bricks with. For very strong work, tow is incorporated with the mortar. Of this the natives make many architectural ornaments, such as columns, arched work and imagery, besides using it for common building purposes. For finer works, to every half bushel the white of five or six eggs and four ounces of *ghee*, or ordinary salted butter, and a pint of butter-milk beaten all well together; mix a little of the mortar with this, till the ghee, butter-milk, and white of eggs be soaked up; then soften the rest well with plain fresh water, and so mix all together, and let it be ground, a trowel-full at a time, on a stone with a stone roller. When you use it, in case it be too dry, moisten it with some water, or the before-mentioned liquors. This is for the second coat of plastering.

When the first coat of plastering is laid on, let it be well rubbed with a hardening trowel, or with a smooth brick, and strewed with a gritty sand, moistened, as occasion requires, with water, or the before-mentioned liquor, and then well hardened again; when half dry, take the last-mentioned composition for the fine plastering; and, when it is almost dry, lay on the whitening varnish; but, if the work should be quite dry, then the chunam liquor must be washed over with a brush.

The best sort of whitening varnish is made thus:—take one gallon of toddy (the juice of a tree), a pint of butter-milk, and as much fine shell-lime as shall be proper to colour it; add to it some of the chunam liquor, wash the plastering gently over with this, and when it is quite dried in, do the same again. A plaster thus made is more durable than some soft stone, and stands the weather better in India than any of the bricks they make there. Butter-milk is always added to the outer coating. There are several varieties of cements of durable quality, and capable of receiving a fine polish.

I have been thus particular in describing one of the Indian methods because the cement so made is vastly preferable in every respect to the plaster of Paris used in the process of scagliola work, and also for making large capitals to imitate marble, which, however beautifully executed, soon lose their polish, and are liable to be injured past the power

of repair. It may be thought that the materials are much too expensive, but the small quantities of each actually required for scagliola or plastering of walls and floors will raise it but little above the common price of cements.

The boles and earths laid on for the imitative part of the work ought to be mixed with the like material, so that it may incorporate as one with the interior coats, the pillars being carefully fashioned on the lathe, as is at present practised, or polished dry, or with the use of the liquor. Clay ought to be used as sparingly as possible, the requisite plastic quality being given to the mass by the mixture. The common scagliola of the day, as exhibited in some of the leading shops of the metropolis, deceives nobody; it is what it purports to be, a vile imitation of Nature; but nevertheless there are some fine specimens to be found in Buckingham Palace, the Pantheon in Oxford-street, in Everington's, and other buildings of the metropolis. No attempt is, however, made in the present day to extend and improve the art of imitating the precious marbles, or to ensure durability, consequently it falls into disesteem, and is rarely used.

I have mentioned in a preceding article that the Palace of Munich is built of artificial marble, the material being boiled, and the colouring added when the boiling mixture has acquired consistence. This practical application of the art might be employed to great advantage with us, chimney-pieces and vast variety of ornaments being by this means formed at so cheap a rate, and of so fine a fabric, as to supersede marble. I trust that this beautiful branch of architectural art will speedily be revived, and that no opulent householder will be without some specimen of it adorning his mansion, as pillars, pedestals, slabs, vases, baths, or other ornament. A little determination and enterprise on the part of the scagliola manufacturers, and the importation of a few first-rate Italian artists, would soon bring it into favourable notice.

H. G. M.

PROJECTED ACADEMY OF PAINTING.

The lovers of the fine arts will hear with no small pleasure that an Academy of Painting is about to be established in Bristol, under the most favourable auspices. Its object would be to foster and call forth native talent and genius in the various branches of art, and to gratify the public by periodical exhibitions of paintings. A School of Design, and prizes to reward superior merit, form also parts of the plan. The want of such an institution has long been felt in Bristol, particularly by the artists, but the sum of money required to give efficiency to the plan is so considerable, that no hopes were entertained of raising it. In fact, a spacious picture gallery, and apartments for artists to study and copy casts, designs, and pictures, form essential parts of the projected scheme. The pecuniary difficulty, the most formidable of all, is, however, removed in a considerable degree by the munificence of a lady, whose name we shall ere long have the pleasure to announce as a contributor of no less a sum than 2,000*l.* (under certain conditions) to the Academy. This splendid example will, we feel no doubt, attract numerous contributions from the public of Bristol and its neighbourhood in furtherance of the design. When we mention that P. W. S. Miles, Esq., M.P., John S. Harford, Esq., and Robert Bright, Esq., are actively promoting this truly interesting object, in conjunction with the artists of this city and neighbourhood, we are persuaded that these names will be deemed a sure guarantee of success.—*Bristol Journal.*

York and Ripon Training Schools.—The subscriptions and donations towards the erection of these buildings already amount to 2,500*l.*; but much more is needed to carry the original design into execution. It is remarked by the *Hull Packet*, that nearly half the subscribers are clergymen.

Hamburg Improvements. — We learn from the *Frankfort Journal* that Mr. Munday, the builder of Abchurch-lane, is at present constructing a sewer at the cost of 80,000*l.* through Hamburg, and employs on the work 500 Englishmen.

VENTILATION.

(From a Correspondent.)

If an architect were to build a house without windows, he would be thought a very odd sort of person, but he may shut out what is far more important than light—fresh air, and neither he nor any one else will discover any thing unusual. We are so much in the habit of looking on a building as a shelter and an ornament merely, that we do not require it to be any thing else. As to any provision being made for a due supply of fresh air, that never enters into the mind of an architect at all, or if it do, he regards it as an art and mystery which has as little to do with construction as law with physic. If fresh air should happen to be insisted on, he must needs call a professor of the science of ventilation to his aid, and he, by dint of fire or force, or both, contrives to accomplish his purpose, as many a legislator can vouch, to his cost.

Now, however, that the importance of ventilation is beginning to be understood, the best means of effecting it are being studied, and several ingenious and scientific persons are taxing their invention to repair the omissions of former architects; some by providing efficient vents for the foul air, others by giving free and safe admission for pure air.

The plans in common use for accomplishing the same object are, the revolving ventilator, the hopper, and the glass louvres.

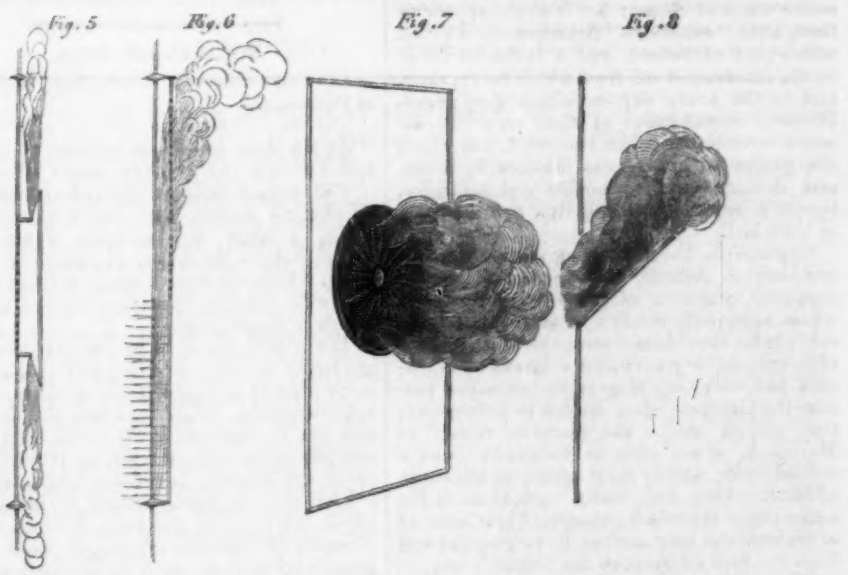
The first of these, *the revolving ventilator*, is open to every possible objection. It is noisy, dirty, ugly, and liable to get out of order; and it does not prevent a draught. When not in action it is useless, and when revolving it is a nuisance.

The *hopper* is somewhat better, but open to the serious objection, that it disfigures a building by breaking the line of the window; and that, though it modifies a draught, it does not prevent it.

The *glass louvres* are elegant in appearance, and ingenious in arrangement, but very expensive, and open to the same objection as the hopper, viz., that they only modify, but do not prevent draughts.

Indeed, it must be quite evident that no form of ventilation which causes the air to enter a room at an angle, however small, can prevent a draught; for the cold air, though its course may be altered, and it may be directed above the head, will descend again into the room before it has mixed with the warmer air of the apartment. There is but one way then in which a draught can be prevented, and that is by a shield fixed, not obliquely, but parallel to the point of admission of the air. If, in addition to this shield, a perforated plate or plates be provided, by which the current of air is broken up into a number of small streams, we have the most complete invention for preventing a draught which it is possible to imagine.

This is the principle of a mode recently invented by Dr. Guy. In place of the oblique shield, of the hopper, and louvre, he employs a parallel shield, by which means the air is distributed over the wall or window by which it gains admission, and all direct draught is effectually prevented. The aperture in the wall or window is filled by a perforated plate, which is flush with the surface of the wall or window itself, and the shield is connected with this plate through the medium of a second perforated plate and flanges.



The first of the subjoined figures (marked fig. 5) represents a section of Dr. Guy's simplest and cheapest form of ventilation, with the course of the air traced by smoke. In this figure, the dotted line represents a plate of perforated zinc bearing upon it a narrow flange. The plate is let into the centre of a pane of glass; parallel with this perforated plate is a shield of glass, joined to a second flange, fitting within the first by means of a second perforated plate, inclined at an angle to the shield and flange. The air enters through the first-mentioned perforated plate, strikes on the glass shield, and is thrown back through the second perforated plate on to the glass, along the surface of which it runs to an extent proportioned to the force with which it enters the room.

Another form, which is open to the objection that the air is thrown into the apartment instead of being confined to the line of the wall or window, is shewn in fig. 6. The remaining figures shew the course of the air as it issues through the revolving ventilator and the common hopper.

It is said that Dr. Guy's invention, besides possessing the great advantage of preventing a draught, may be made to assume a great variety of ornamental forms, so as to adapt it to any style of architecture. The parallel position of the shields evidently gives it an advantage, in this respect, over all other forms of ventilator. When the apertures in the zinc are large (as they must be in large towns, or they will soon become so clogged with dust and soot as not to allow any air to pass), and the shield is of glass, the ventilator obstructs very little light, and if kept clean, is open to no reasonable objection. Messrs. Cottam and Hallen, in whose hands Dr. Guy has placed his patent, have succeeded in introducing the ventilator securely into a pane of glass without using cross bars, so that the pane and the ventilator seem one.

If on trial Dr. Guy's invention shall be found effectually to prevent a draught, we shall congratulate him and the public on the fulfilment of a great desideratum. The prevention of a draught lies at the root of all improvement in this respect; without it, the most elegant and costly inventions are mere waste of time and money.

[We shall take an opportunity to examine this invention.—Ed.]

Proposed Method of Cleaning Statues exposed to the Air.—It has long been remarked that the stone staircase of the bronze obelisk to the memory of the Bavarians who fell in the campaign of Russia, was perfectly clear from green mould in the parts washed by the rain. M. Jobard, of Brussels, is of opinion that the oxide of the copper carried down with the rain destroys this vegetation; and recommends that a solution of copper should be tried in the cleaning of statues covered with vegetable matter.

ORIGIN OF THE APPELLATIONS DORIC, IONIC, AND CORINTHIAN,

AS APPLIED TO THE ORDERS OF ARCHITECTURE.

Researches into the early history of nations, the rise and development of their languages and arts, have long possessed a peculiar charm for the inquirer, though little but conjecture can result. Out of the mass of mythi and traditions handed down from the times when the Pelasgi ruled, or from those in which the first symptoms of Hellenic civilization appeared, how hard must it be from the false to select the true, to divest the tangible body of its beautiful but deceptive garb. Yet I venture to offer a few conjectures, arising out of certain well-authenticated features in the early age of Grecian history. During that period the Hellenes were divided into four great tribes, two of which subsequently merged into the others; and the country may from that time be considered as inhabited by the widely differing races of the Dorians and the Ionians. In examining the characteristics of the latter, we behold a yearning after intellectual culture, a keen perception of the beautiful, and a desire to excel in the arts, which gave birth to the philosophic legislature of Solon, the breathing sculpture of Phidias, the impassioned poetry of Sophocles, and the commanding eloquence of Demosthenes. Wheresoever the Ionian influence was shed, arose a people peculiarly alive to the refinements of life, sowing seeds destined to expand and refructify till the globe itself should become extinct. Athens, "the violet queen," from her isolated position in the continent of Greece, retained in a peculiar manner the distinctive impress of an Ionian origin. Angelica Kaufmann somewhat fancifully ascribed her enthusiasm to the water of Rome; but it would appear as though the "earthborn" Athenians were gifted with a love of beauty, and a thirst for fame, by the consecrated soil from which they sprung, and by the azure sky on which they gazed. Historic recollections of their own city, for whose sovereignty deities contested, and where the genius of liberty was invoked by Solon, and defended by Harmodius and Miltiades, tended to enlarge and heighten the influence of their birth.

Opposed to the revivifying picture we contemplate in Athens, we are struck by the repulsive character of the Dorian Spartans, whose name only remains to after-times. Fit subjects for the cold and mechanical legislature of Lycurgus, they were ever desirous by craftiness and obstinacy to gain the supreme rule over the Grecian states. Selfish in their policy, they shared not in the glorious victory of Marathon, which even to themselves was a second birth, and by their apathy to the cause of Greece, they had nearly brought about the enslaving of the whole country. Their severity of manner was increased by Lycurgus, but was from the first a feature of the Dorian race.

The peculiar characteristics of the two nations being thus contrasted, may we not argue that the names "Doric" and "Ionic," as applied to each order of architecture, severally arose, not so much from its having originated in any particular country, as from its typifying those distinctive features?

It is scarcely requisite to contend against the exploded story of Vitruvius (lib. iv., c. i.), since the period to which he assigns the introduction of the orders is long antecedent to the time of Homer, who, so remarkable for the care he takes in describing minute points in the history of his own time, would hardly have omitted mention of the names. Columns, indeed, he speaks of, but without leading us to suppose that they were any thing but posts; and we know from Pausanias and others, that the earliest temples were constructed of the rudest materials. (Pausan. lib. x., c. v.) The opinion of Goguet (Origine des Lois, &c.), that the orders arose in the colonies of Asia Minor, may have foundation, without militating against the opinion expressed as to the origin of their names. But, if the Doric order was invented by the Dorians, to which country, bearing the name Doris, must it be ascribed? Names are not good marks for ascertaining the origin of things; in proof of which we need but cite the appellation Gothic. If the Ionian colonies preferred the Ionic order, we should hardly assume that circumstance as a proof that it was by them invented: we might with as much propriety ascribe the *invention* of the Corinthian to the Romans. (Gwilt.) The fact is, there is no conclusive evidence for stating the origin of either order; but, it appears, that, whichever was invented first, *that* one received no distinct name, further than the name "Grecian order," until the invention of the second, when the names would be applied for the reasons stated. Holding these opinions as to the Doric and Ionic orders, I feel even more confidence in stating them as regards the Corinthian. The story of Vitruvius can but be considered as a beautiful fable; for there are Egyptian capitals, bearing so striking a resemblance to those of the Tower of the Winds, which last were, probably, copied from the earliest examples, that we feel justified in looking to Egypt as the country from which the first idea of the order was brought to Greece. Heeren (Manual of Ancient History) says, that "what the Greeks borrowed from foreigners, they previously stamped with their own peculiar character, so that it became as it were, the original property of the nation." Thus was it with the Corinthian; under their improving hand the decorations of its capital were varied and nationalized; and, in place of encircling its bell with plants nourished by the the waters of the sacred Nile, they substituted leaves of the olive, sacred to the tutelary deity of Athens. It became the richest of the orders, and, the city of Corinth being famed for richness and luxury, the order was denominated "Corinthian," a name probably applied to any thing of surpassing luxuriance, in the same manner that the term "Cyclopian" was given to works of great size or laborious execution, though, perhaps, not erected by the Cyclops. We need but mention the words "stentorian" and "herculean" as having had similar origin.

Edward Hall.

SOCIETY OF ARTS.

January 8th.—Dr. Roget, Sec., R.S.V.P., in the chair.

The first illustration for the evening was "On the Arts and Manufactures of Mexico and Yucatan," by the Rev. James Thompson.

The second subject for illustration was "Pilbrow's Atmospheric Railway, without a valve," a large working model of which was placed before the meeting, including a carriage, which was moved on the railway at considerable velocity by exhausting the tube by means of an air-pump.

The object aimed at by the inventor is to get rid of the slot or chase in the cylindrical main pipe or tube, and also the valve, with its appurtenances. If, in practice, this desideratum can be attained as efficiently as it is accomplished on a small scale, an important advance will be made in railway locomotion.

The pipe or tube, instead of being fixed above the level of the rails, as in the case of Pinkus's and Samuda's plans, is sunk considerably below it, whereby facilities are afforded of effecting a junction between two or more railways, as also of allowing (when necessary) roads and railways to be crossed on a level. At intervals of about 30 feet are fixed two boxes, cast on to the tube, one on each side, in each of which works a vertical spindle or axis, to which are fixed two small cog-wheels or pinions, the one being inside the box, and the other outside. A diaphram or piston works within the main pipe or tube, as in the ordinary atmospheric railway tube, to which, however, is attached a double rack, so that when the piston is moved forward by the exhaustion of the tube in front of the piston, the rack is moved with it, and which, working on two or more sets of the lower or under pinions, causes the upper or outside pinions to revolve at the same time and with the same velocity. A second rack, of the same length as that within the tube, is attached to the first carriage of a train, and as the upper pinions revolve, the rack, and consequently the carriage to which it is attached, moves with it. Thus the valve ordinarily used is entirely dispensed with.

The London Baths and Wash-houses.—The Committee have so far advanced their plans as to be ready to treat for the purchase of eligible sites for the erection of model establishments. The space required is equal to 100 feet square at the least. The situation, in or very near to a crowded and poor neighbourhood, but with good access. Freeholds will be preferred.

New Books.

Ecclesiastical Architecture. A series of illustrations of the rise and progress of decorated window-tracery. Edited by E. Sharpe, M.A., Architect. Van Voorst, London, 1845. No. 1.

The object of this work, according to the prospectus, is to supply the want of some publication expressly devoted to the illustration of the origin of tracery, its gradual development, and the perfection which it attained in the middle of the 14th century. Our parish churches contain examples which for purity and elegance of design are unsurpassed, and it is proposed to present in this publication a continuous series, exhibiting the gradual alteration which took place from the early geometrical form to the elaborate window-heads of rich flowing tracery. The present Number contains eight examples, and is nicely got up. The work would be more valuable if sections accompanied the elevations.

Correspondence.

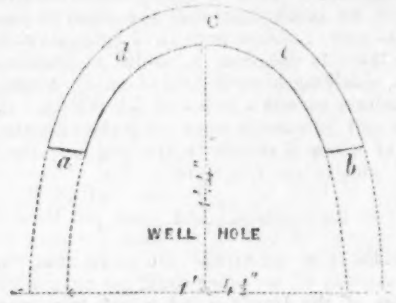
HAND-RAILS.

TO THE EDITOR OF THE BUILDER.

Sir,—By inserting the following question, you will oblige me and instruct many:—

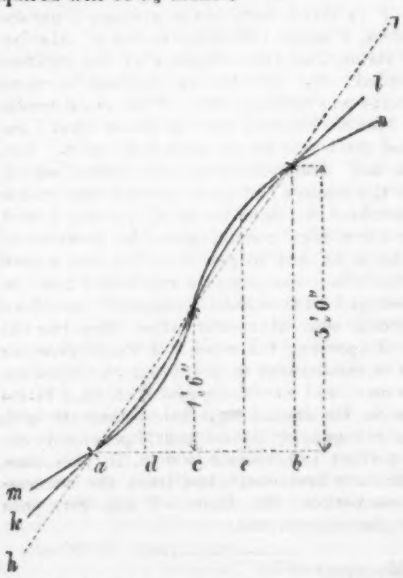
What is the least thickness, and how much stuff will be used, in getting out a hand-rail 2½ × 2 in., as the drawing, without a joint, the rise on the falling mould from *a* to *b* being 3 ft.?

J. W. W., Jun.



Answer.

If the mean inclination of the rail from *a* to a point 3 feet in height above *b* be uniform, as shewn by the dotted line *h i*, in the diagram below, the thickness of plank required for the formation of the wreathed rail (moulded in the ordinary manner) will be 4¼ inches; or, if the mean inclination be an undulating curved line, as shewn by the line *k l*, the thickness of plank required will be 3½ inches.



Again, if the mean inclination be such as shewn by the undulating curved line *m n*, the thickness of the plank required should not be less than 2¼ inches, so as to allow for the proper finishing which ought to be given to the work.

G. R.

SHIP-BUILDING.

Sir,—From the name of your paper, I presume you enter into the controversy of ship-building, for nothing can be worse than those that have lately been built for the service of Government.

I have all along asserted we shall never improve the speed of our ships without we alter their form, which is decidedly against going a-head. If they would study to make the sails on the fore-mast to keep the ship to the wind, we should not want all that after-sail for that purpose, which impedes going through the water. Our study should be that the prows divide the water, and as it comes aft, should form that resistance at the water-line only, and not as it is at present.

We are going to commission a number of ships, to try their good qualities, but as for sailing, they will never go faster than they have invariably done, from the mal-formation adhered to. A sensible plan has been suggested, that would increase speed without interfering with masts, yards, or sails, but they in their wisdom will not give it a trial, because it will bring into notice a power that will supersede spending so much of the public money, and being a novel idea, it is not attended to.—I am, Sir, your obedient servant,

NAUTICUS.

London, Dec. 31, 1844.

ESTIMATE FOR WORKS NOT TO BE EXECUTED.

SIR,—The exposure of injustice is a laudble undertaking, but he who attempts to make the exposure should assure himself that his accusation is correct, otherwise he may be inflicting a real injustice upon the party accused, while he is endeavouring to expose a fancied injustice, which, nevertheless, has not been committed. This, Sir, is often exemplified among those numerous (?) mis-statements which so much depreciate the value of your useful paper; and, at page 11 of your last number, there is one from a builder at Dartford, who, shielding himself behind an anonymous siguature, asserts a series of falsehoods. He does not venture to name the parties accused, one of whom is my client, residing near Dartford, and the other is myself. The accusation is, that we have, by a particular method, "victimized the builders," and have put them to the expense of making estimates for work not intended to be executed. He states that, "as the sanctity of my office could not be invaded, copies of the drawings and specification were to be furnished, upon each competitor paying down five guineas, and a copy of the quantities for four guineas more." The fact, however, is, that no copies nor any quantities were furnished by me, nor did I receive one shilling from either of the builders, but each competitor employed persons who were sent to my office for that purpose, and who, I assure you, invaded its sanctity much more than was agreeable. Your correspondent makes out, that I received forty-seven guineas from the builders, whereas I received nothing. He further states, that the estimates of the builders exceeded mine, but that was impossible, as no estimate was made by me. The lowest tender was Mr. Kirk's, and was not above what I expected the house would cost, but, to my surprise and disappointment, my client stated, after the tenders had been opened, that it was not prudent for him to spend so much, and, after a few days' consideration, he determined not to build, but to pay Mr. Kirk and myself for the labour and expense which had been incurred, and he thus most honourably sacrificed a certain sum of money rather than run the risk of spending too much. I would now ask your correspondent to point out the injustice, if he can; and would suggest that, on a future occasion, he should sign his statements with his own name, or that he should previously obtain correct information, which, in this case, might have been easily had from the successful competitor, Mr. Kirk.—I am, Sir, your most obedient servant,

EDWIN NASH, Architect.

53, Moorgate-street, London.

7th January, 1845.

[We readily give place to Mr. Nash's letter. The statement to which it refers did not mention the names of the parties, and was admitted into our pages as applying to a *class* of cases. Mr. N. will observe, by our note attached to it, that we had no confidence in its accuracy as applied to the case immediately in question. —ED.]

ARCHITECT'S COMMISSION.

SIR,—Will you be kind enough to inform an old subscriber what are the usual professional charges of an architect. As for "general drawings," "working ditto," and "specification," "superintendence," &c., I am aware that the charge, including every thing, is usually 5 per cent. on the outlay, but I wish to know how that is generally divided under the heads given above. Hoping you will oblige me,

I am, Sir,

Yours respectfully,

H. G.

[There is no general rule for such a division. The charge for designing and superintending works is 5 per cent.; but it does not follow that if the various matters included in that charge are done for different persons, or at different times, that the separate charges should amount only to 5 per cent. 2½ per cent is an ordinary charge for plans and specifications when the building is not executed. 5 per cent. for designing and superintending does not pay for the time occupied and the responsibility incurred when the amount expended is small, and many architects charge more than this commission when the amount is under £500. An auctioneer is much better paid: he walks through a house full of furniture, jots down what he thinks the value of each item, and charges 5 per cent. on the gross amount.—ED.]

BRIDGE OVER THE LEA AT HACKNEY.

SIR,—I beg to inclose a notice, just issued, for tenders for building a bridge across the Lea. I should think that the persons about to tender for the same will take care to ascertain that the parties have made up their minds to have the bridge built, or, as in the last case, they may have the pleasure of making out the specifications for the trouble. At all events, they will not have among their victims

Your obedient servant,

A BUILDER.

"*To Bridge Builders, Carpenters, and Others.*—Notice is hereby given, that the Board of Surveyors of the Highways of the parish of Hackney have ordered to be built a new wooden foot-bridge, over the River Lea, near Temple Mills, in the Hackney Marshes. A plan of which, and specification of the works to be done, may be seen at the committee room in the parish house, in Church-street, Hackney any day (Sunday excepted) from January the 6th to January the 16th, between the hours of nine and three; and any further information may be had on application to Mr. Samuel Fox, jun., of Morning-lane, Hackney, surveyor. Sealed tenders, endorsed "Tender for Bridge," to be sent into the clerk before Thursday the 16th inst., on which day, at seven o'clock in the evening, the board will meet, at the place aforesaid, to open such tenders, and to contract. The board do not bind themselves to accept the lowest tender. The persons who Tender must attend the board personally, to answer when called for.

"By order of the board,

"CHAS. HORTON PULLEY, Clerk.

"28, Great Winchester-street, and Upper Hommerton. January 1st, 1845."

Obituary.

MR. ALFRED BARTHOLOMEW, F.S.A., the late Editor of this Journal, expired, after a severe illness, on the 2nd instant, at his residence in Gray's-Inn. We cannot now do more than express our sincere regret, but shall endeavour next week to furnish our readers with some particulars of his life and works.

MR. THOMAS WEBSTER, Professor of Geology in the London University, who died on the 26th of last month, was educated as an architect, and built the theatre and laboratory of the Royal Institution; but ultimately abandoned the profession for philosophical pursuits.

THE NEW FRENCH PROTESTANT CHURCH.—Last Thursday week the ceremony of laying the first stone of this church, situate in Bloomsbury-street, late Charlotte-street, was performed by the Bishop of London. It is to be built in the Elizabethan style, the front facing Bloomsbury-street. The dimensions are rather confined, being 68 feet 6 inches by 38 feet 7 inches, affording room for about five hundred persons. A gallery is to be erected in the west end. The architect is Mr. Amb. Poynter.

Miscellanea.

GIBBONS' WOOD CARVINGS AT CHATSWORTH.—A visitor, on viewing the suite of rooms of that magnificent mansion, Chatsworth, cannot fail in remarking the excellency of the carvings in wood, which adorn, in many instances, the interior of this truly termed "Palace of the Peak." They consist in representations of dead game, fish, flowers, shells, and trophies, variously composed and distributed, being the efforts of that celebrated artist, G. Gibbons, particularly in the chapel. In the great antechamber are several dead fowl over the chimney, finely executed, and over a closet-door a pen, not distinguishable from a real feather: the latter is considered his chef-d'œuvre. When Gibbons had finished his works in that palace, he presented the Duke of Devonshire with a point cravat, a woodcock, carved in wood, and likewise a model with his own head, all preserved in a glass-case in the gallery. Horace Walpole says, that "There is no instance of a man before Gibbons who gave to wood the loose and airy lightness of flowers, and chained together the various productions of the elements, with a free disorder natural to each species." In the "Family Library" we also find the claims of that artist strongly enforced. All the wood carvings in England fade away before that of Gibbons, at Chatsworth;—the birds seem to live, the foliage to shoot, the flowers to expand, before your eye. The most marvellous work of all is a net of game. You imagine, at the first glance, that the gamekeeper has hung up his day's sport on the wall, and that some of the birds are still in the death flutters. Gibbons' works chiefly are the carvings in St. Paul's choir, the wooden throne at Canterbury, the embellishments at Chatsworth, Petworth, Burleigh, Houghton, Southwick, in Hampshire, where the whole gallery is embroidered in pannels, by Gibbons' own hand, and the altar-piece of Trinity College, Oxford. This artist was appointed master carver in wood to George the First, with a salary of eighteenpence a day, which splendid allowance he enjoyed from 1714 to 1721, on the 3rd of August in which year he died.—*Doncaster Gazette.*

PROPOSED NEW CHURCH AT FERRIBY.—A meeting of ratepayers was lately held in the parish church of Ferriby, to consider the propriety of building another church. We understand that Joseph Robinson Pease, Esq., of Hessle Wood, who was present at the meeting, greatly to his honour, generously stated, that his tenants should not be called on to pay one farthing towards it, as he himself would pay their portion.—*Hull Packet.*

MR. COCKERELL'S LECTURES.—Mr. Cockerell commenced his course on architecture at the Royal Academy, on Thursday night. In the next and following Numbers we shall furnish our readers with a report of them

HORNSEY DISTRICT.—The death of Mr. Bartholomew has left this district vacant. *Seven* candidates have already declared themselves, namely, Mr. James Harrison, Mr. S. S. Teulon, Mr. Moon, Mr. Thomas Bird, Mr. Witherden Young, Mr. Herbert Williams, and Mr. John Dent. Some of these gentlemen have not yet passed the examiners, and will not be able to do so in time for this election, as will be seen, on comparing the two following notices:—

A notice has been issued by the Middlesex magistrates, signed "C. H. Ellis, Clerk of the Peace," to the effect, that the court will proceed, on Thursday, the 30th instant, to the election of a surveyor for the district of Hornsey. All candidates must, on or before Friday, the 17th instant, forward to the clerk of the peace a statement, in writing, of his name, residence, age, and qualification, and must also personally appear before the Committee for General Purposes, at 12 precisely, on Saturday, the 18th instant, at the Sessions House, Clerkenwell.

A notice has been issued by the Registrar of Metropolitan Buildings, "that the examiners will hold their next examination of persons desirous to obtain a certificate of qualification for the office of district surveyor, on Friday, the 24th instant. Persons desirous to be examined must apply on or before the 23rd instant, and their applications must be accompanied by a preliminary statement, according to the course of examination prescribed in the rules for that purpose."

INCRUSTATION IN BOILERS.—The incrustation formed by deposits from the water in steam-boilers is the cause of considerable inconvenience and loss. In some cases it is necessary to clear it away every three or four weeks, for which purpose the works must be stopped, unless there is a second boiler. In the operation too, the boiler is necessarily injured, and at all times it causes great waste of caloric. Any invention to prevent this is important. Letters patent have recently been granted to Mr. Francis Watteeu, for a material by which this desideratum is said to be attained. It is inexpensive and innocuous; is applicable to all sorts of boilers, and acts by preventing crystallization and attraction.

RESTORATION AND RE-OPENING OF SKERNE CHURCH.—Skerne Church was re-opened on the 22nd of December. This edifice has undergone a complete restoration; the roof is entirely new and a Gothic design; the pews are designed to resemble open seats and stall ends; they are of a simple character, and are also new; the pulpit, reading desk, altar rails, and table are exceedingly chaste specimens of ancient architecture. The stone-work of the windows, &c., has been also restored to its original design, by Messrs. Simpson and Malone, of Hull. The church is heated by an ingenious hot-water apparatus, fixed by Atkinson, of Driffield. The roof and all other wood-work has been stained and varnished in imitation of old oak; the Commandments, Creed, and Lord's Prayer are upon four tablets of slate, in the ancient illuminated style; and these, in addition to the national arms, which have also been emblazoned, have all been executed by Messrs. Binks and Son, Hull. The whole of the works connected with the above restoration have been executed under the judicious management of Mr. C. Appleton of Anlaby, upon whom it reflects the highest possible credit as a builder. The whole of the restoration has been at the expense of Charles Arwright, Esq., of Dunstall, Burton-upon-Trent.—*Hull Packet.*

THE NEW BUILDING ACT.—On Thursday the district surveyor for the Strand district, accompanied by assistants, viewed the houses in the parishes of St. Mary-le-Strand, &c., in which persons resided in cellars or underground kitchens, in order to see whether they were fit for habitation. In New Church-court and other places the cellars were very confined, and in some places the landlords were called upon to give notice, under the New Building Act, for the occupiers to quit within a fortnight. In other cases, where the kitchens were dry and of sufficient size, the only other requisite being light and air, notice was given to the owners to increase the size of the windows, and to extend the gratings over the area in front.—*Young England.*

BATHS FOR THE WORKING CLASSES.—We are gratified to learn that the traders of this city continue steadily to subscribe to the erection fund of this institution, and are determined to do their utmost to carry out the scheme. As an instance of the spirit with which they subscribe, may be adduced that of the workmen at the Holyrood Glass-works, South Back of Canongate, who paid to the sub-treasurer the other day the sum of 20*l.* sterling, as their subscription. When the number of men employed at these works is taken into consideration, the average subscription of each will appear very large, and evinces how much self-denial the workmen are capable of to carry out a plan upon which they now set their hearts. —*Edinburgh Witness.*

IMPROVEMENTS AT WHITEHALL.—We are informed that Mr. Barry has been directed to examine the buildings now occupied by the Board of Trade, with a view to provide additional accommodation for the different departments now under the control of that board. Mr. Barry has determined upon a plan which will afford the required accommodation, and greatly improve the present appearance of the buildings, by raising the elevation, and thus afford an effectual screen to the ugly roofs and chimney-pots which are now visible above the present parapet. It is also in contemplation to pull down the old building at present occupied by the department of the Home Secretary of State, which has long disfigured that portion of Whitehall, and to erect a more sightly structure in conformity with the new front of the Board of Trade.—*Observer.*

HIGHGATE TUNNEL.—It will probably be in the recollection of many persons living, that early in the present century, an attempt was made to construct a tunnel through the London clay at Highgate Hill, for the purpose of making a more easy communication between Holloway and Finchley. The attempt, however, failed, and the result was the construction of the open cutting which forms the present Highgate Archway-road. The failure appears to have arisen, in a great measure, from the want of experience on the part of the engineers who had charge of the work, more especially as they had such very difficult and heavy ground to work in as the London clay. Those who have witnessed the trouble and difficulties that have been recently experienced in working in that treacherous soil will be less surprised at a failure in such a work thirty years ago. In the year 1811, while the works at Highgate were progressing, the committee of management thought it necessary to obtain the opinion of the late John Rennie, Esq., as to the correctness of their mode of proceeding, as difficulties began to appear. The report of that truly eminent engineer threw some light on the probable cause of the failure of the work, and at the same time led to the erroneous opinion that too generally prevails, namely, that Mr. Rennie was the engineer to the said work; whereas the fact was otherwise. The author believes that Mr. Nash, the architect, was the principal, and a Mr. Vazie the resident engineer. It may, at the present day, be a matter of surprise that an architect should undertake the construction of a tunnel; but so late as August 17th, 1812, there appeared in the *Star*, a London newspaper, an advertisement from the Regent's Canal Company, addressed to "architects and engineers," offering a premium of fifty guineas for the best design for a tunnel that was to be made (and afterwards was made) under the town of Islington; in which advertisement it was stated, that the company were "anxious to have the best information which science and practice can afford on the subject."—*Practical Tunnelling by F. W. Sims, C. E.*

WEIGHT OF BRICKWORK.—An experiment was tried on September the 3rd, 1842, to determine the weight of a cubic yard of brickwork. On the works at Saltwood there was an excellent weighing machine, by Pooley and Son, upon which the experiments were tried:—

BRICKWORK IN CEMENT.

	Ton	cwt.	qrs.	lb.
A cubic yard of dry bricks (384)	1	2	1	20
Sand, water, and cement for ditto		6	2	4
Total weight of a cubic yard of brickwork in cement	1	8	3	24

BRICKWORK IN MORTAR.

	Ton	cwt.	qrs.	lb.
Bricks, as above	1	2	1	20
Mortar for ditto		4	1	8
Total weight of one cubic yard of brick-work in mortar	1	6	3	0

—*Ibid.*

THE LATE MR. GEORGE MADDOX.—We direct our readers' attention to an effort now making to obtain a fund for the widow of the late George Maddox, an able man, to whom many members of the profession are indebted.

LABOURERS' COTTAGES.—In the course of an inquiry before the coroner for Oxfordshire, touching the death of a poor girl at Hampton Poyle, a village within six miles of Oxford, it came out that the cottage of the family contained only one sleeping room, and that of the most miserable description, being near the thatched roof, and being barely high enough to stand upright in the middle. There were three beds in this room, and eight persons (comprising the father, mother, a grown-up daughter and son, and four young children) occupying it as a dormitory. This is not at all an isolated case in the neighbourhood of Oxford, where, with the exception of a few villages, the labourers' cottages are wretched in the extreme.

THE COLLINGWOOD MONUMENT.—This edifice has risen to the height of 18 feet above the ground. It stands at the entrance of the Tyne, a little to the west of the Spanish Battery, and will form a conspicuous landmark for seamen, easily distinguishable from all others. In consideration of this circumstance, a subscription of 100 guineas has been made by the Trinity House of London. The height of the erection, including Mr. Lough's statue (21 feet high), will be 80, 90, or 100 feet, just as the countrymen of Collingwood, and more especially his townsmen, may decide.—*Durham Advertiser.*

Tenders.

TENDERS delivered for Erecting the New Pheasant Public-house, at the corner of the Palace New-road, Stangate.—Messrs. Willshire and Parris, Architects, Lambeth.

Mr. Samuel Mason	£1,248
Messrs. Plaskett and Shelton ..	1,230
Mr. Robert Hicks	1,210
Mr. John Willson	1,188

The quantities taken out and supplied to the builders, and the tenders opened in their presence.

TENDERS delivered for the Erection of Two Cottages, Cow-shed, and Stabling, at Chiswick, for Mr. Pits.—Mr. Welsted, Clerk of the Works, St. John's-wood.

Fitswater, Hammersmith	£642 10
Langwith	610 10
James Slade	590 10

The tenders opened in the presence of the parties.

NOTICES OF CONTRACTS.

For building a Sewer in Vine-street, Minories.—Joseph Daw, Sewers' Office, Guildhall. January 14.

For the erection of a Wesleyan Chapel at Hythe.—Mr. T. Pilcher, Stationer, &c., Hythe. January 21.

For making a Sewer in the town of Cambridge. The sewer to be cylindrical, and 2 feet diameter in the clear, the length will be about 385 yards, and the average depth about 9 feet.—Frederick Randall, Town Hall, Cambridge. January 21.

For Warming and Ventilating the new Buildings of the Suffolk Lunatic Asylum; and for fitting up the laundry with Drying Apparatus, upon the most approved plans.—John Henry Borton, Milton, Suffolk. January 21.

For the Erection of Stone Booking-offices at Ashton and Stalybridge Stations; and for the Erection of a Station at Sheffield for the Sheffield and Manchester Railway Company. January 21.

For the erection of the Railway Works between Leeds and Bradford, including fencing, earthwork, masonry, roads, and permanent way.—William Clarke, Secretary, Hunslet-lane Station, Leeds. January 27, 1845.

For the execution of Works on the Chester and Holyhead Railway.—1st. A distance of eight miles, or thereabouts. 2nd. A distance of twenty-two miles, or thereabouts. 3rd. A Tunnel through the promontory of Penmaen Back, near Conway.—George King, Secretary, 62, Moorgate-street. January 29, 1845.

For the Execution of Works on that part of the Blackburn and Preston Railway extending from Blackburn to Pleasington, being about 3¼ miles in length.—Peter Sinclair, Secretary, Blackburn. January 29.

For the supply of Wrought Iron Rails and the requisite number of Chairs for about 15 miles of the Southport and Euxton Junction Railway. The weight of rails to be from 60lb. to 70lb. per lineal 2 yards and 15 feet lengths, equal to from 1,500 to 1,800 tons of wrought iron, and about one-third of that quantity of cast iron.—Woodcock and Part, Solicitors, Wigan. January 31.

For erecting the Works of the third division of the Main Line of the Great Southern and Western Railway, being 11 miles, 6 furlongs, and 75 yards in length. Also for the first division of the Carlow branch, being 10 miles, 7 furlongs, and 160 yards; comprising excavation, embankments, bridges, culverts, &c.—William Taylor, Secretary, 3, College Green, Dublin. February 1.

For the supply of 11,000 feet of nine-inch cast-iron Pipes for a new line of Aqueduct to be laid in the Island of Malta.—Vin. Casolani, Collector of Land Revenue, Office of Land Revenue and Public Works, Valletta, Malta. March 31, 1845.

COMPETITIONS.

Plans and estimates are required for a Pauper Lunatic Asylum for the County of Somerset; the building to accommodate 300 patients, and to contain two Stories. The Committee of Visiting Magistrates wish it to be of a plain, cheerful character, but will not further fetter the architect by suggesting any particular arrangement as to the interior, its ventilation, warming, or otherwise. The ground selected contains 36 acres.—The Clerk of the Peace, Taunton. A Premium of 100*l.* will be adjudged for the best plan, and 50*l.* for the next best. January 22.

Plans and estimates are required for a Workhouse, to contain about 1,180 persons. The whole to be done in a plain and substantial manner, without any expensive embellishments. The plans and architects' estimates to be sent to Robert Mercer, the Clerk of the Clifton Union, Pennywell Road, Bristol, on or before the 17th of February next, and